CAUSES OF DEATH.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Total Deaths from All Causes	1808	1501	1821	2134	2135	2033	2780	2252	2098	1916	1633	1781	2389
Disease	1706	1418	1727	1995	2005	1897	2605	2086	1951	1769	1516	1676	2235
Violence	102	83	94	139	130	136	175	166	147	147	117	105	154
GENERAL DISEASES:													
Febrile or Zymotic—													
Cerebro-spinal fever	16	19	23	20	18	34	35	15	24	15	14	16	249
Chicken-pox	....	....	....	....	....	....	....	....	....	....	1	....	
Diphtheria	74	45	49	35	45	45	41	55	76	104	140	132	*a*] 84
Influenza	20	7	4	6	6	1	1	....	....	1	3	2	5
Malarial fevers	5	1	2	4	3	2	1	1	5	4	4	2	3
Measles	10	9	26	23	20	20	20	17	8	7	4	18	18
Mumps	....	....	....	....	....	....	1	....	....	1	....	1	
Scarlet fever	30	23	16	18	13	16	17	19	5	8	10	15	19
Smallpox	29	55	100	157	253	171	51	53	31	40	51	42	103
Typhoid fever	46	26	27	30	31	31	37	52	71	68	39	34	49
Whooping cough	16	10	11	14	23	15	24	35	38	8	11	5	21
Total	246	195	258	307	412	335	228	247	258	256	277	267	328
Diarrheal—													
Cholera infantum	....	....	....	....	....	127	1041	662	502	....	....	....	233
morbus	1	1	....	2	1	5	22	12	8	....	1	....	5
Diarrhea	6	1	5	8	5	13	....	....	....	....	....	2	4
infantile	5	4	12	10	21	....	....	....	....	255	76	64	44
Dysentery	3	3	3	4	5	4	27	5	6	3	1	....	6
Total	15	9	20	24	32	149	1090	679	516	258	78	66	293
Zoogenous—													
Hydrophobia	....	....	....	....	1	2	....	1	....	1	....	....	5
Vaccination	....	....	....	....	....	....	1	....	....	....	....	....	1
Total	....	....	....	....	1	2	1	1	....	1	....	....	6
Venereal—													
Syphilis, acquired	....	....	....	....	1	1	....	2	2	1	3	1	11
congenital	2	5	2	10	....	1	4	3	3	2	4	5	41
Total	2	5	2	10	1	2	4	5	5	3	7	6	5
Septic—													
Erysipelas	7	10	3	9	10	5	5	2	6	2	4	9	7
Puerperal septicemia	8	10	8	5	5	6	25	9	11	8	12	17	124
Pyemia	2	2	7	10	1	4	4	....	1	....	1	3	35
Septicemia	15	6	15	20	12	6	12	8	6	7	5	11	12
										17	22	40	354
										2	5	....	23
										2	5	....	23
										8	10	7	84
										1	....	....	1
Scurvy	....	....	....	....	1	....	2	....	....	....	....	....	3
Total	10	3	3	9	3	5	10	8	11	9	10	7	88

Report of the Department of Health of the City of Chicago

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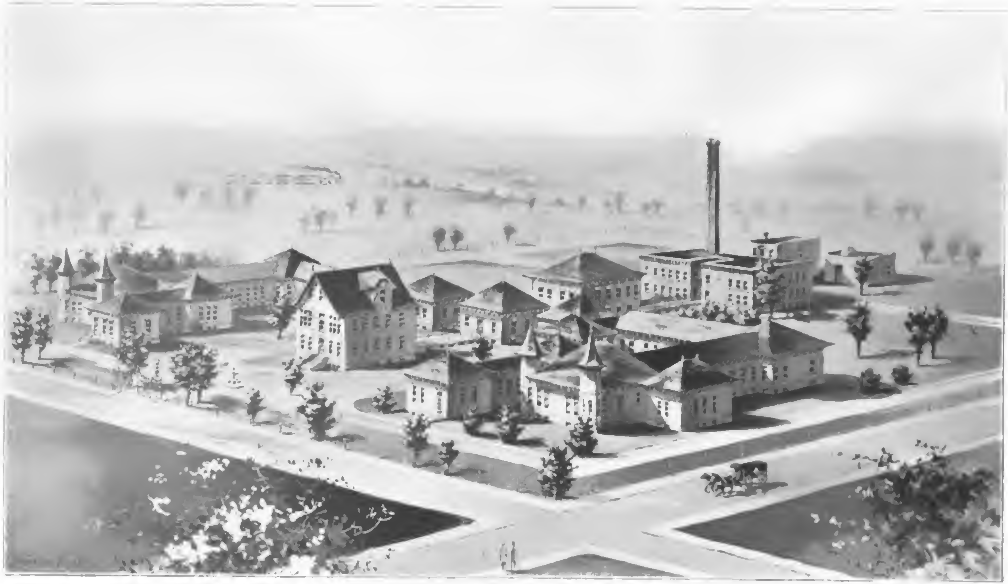

CHICAGO ISOLATION HOSPITAL

[UNDER CONSTRUCTION.]

ANNUAL REPORT

OF THE

Department of Health

OF THE

CITY OF CHICAGO

FOR THE

YEAR ENDED DECEMBER 31, 1894

ARTHUR R. REYNOLDS, M. D.

COMMISSIONER OF HEALTH

CHICAGO
1895

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ERRATUM.—Third line from top of page xlv, for "Philadelphia, 3.8," read *Philadelphia*, 3.2.

Summary Report

OF THE

Commissioner of Health

ARTHUR R. REYNOLDS, M. D.

DEPARTMENT OF HEALTH.

OFFICE OF THE COMMISSIONER,
CITY HALL, CHICAGO: 1895.

To His Honor, THE MAYOR, *and the*
Honorable, THE CITY COUNCIL *of Chicago:*

GENTLEMEN: The year 1894 has passed into history as the most healthful on record in all parts of the world where vital statistics are registered and Chicago continues to be not only the healthiest large city on the American continent but the healthiest among all cities of magnitude in any quarter of the globe. Even computed on the discredited Official Census taken in April the death rate is lower than ever before recorded for a city of more than 200 000 population. That the figures of the April census—1 567 727—are too low has been proven by test censuses made in May; by the public-school enrollment for the year ended June 30, 1894; by comparison with the two immediately preceding official censuses; and by the registration of voters in October of the census year. On the basis of 5.5 per cent. deficiency shown by the test censuses the population would be 1 653 951; on the basis of the school enrollment the population would be 1 678 967; on the basis of the rate of increase between 1890–1892 the population would be 1 709 793; and on the basis of registered voters—1 to 6—the population would be 1 882 962. Of these four bases of calculation that of the school enrollment should be the most trustworthy—since the name, residence and other data of each individual scholar enrolled are matters of permanent record.

For the four years 1890–1893 inclusive the public-school enrollment represented 11.04 per cent. of the population. The enrollment for the school year ended June 30, 1894, was 185 358, which is 11.04 per cent. of 1 678 967—and this is probably the minimum average population of the city living during 1894. [*a*.

Nevertheless, the Department accepts the figures of the Official Census, 1 567 727, as the population for the year; and on this basis—the total deaths from all causes being 23 892—the death rate of 1894 was 15.24 per thousand of population.

---

a] The assumption that the figures based on the public-school enrollment represent only the "minimum" population of 1894 is borne out by the fact that the parochial-school attendance has disproportionately increased during the last two years. The average annual increase of attendance at the parochial schools prior to 1892 was almost exactly 2.5 per cent. But between May, 1892, and April, 1894, it increased 19 per cent., or at the rate of 9.5 per cent. per annum. This, of course, involves a proportionate loss in the public-school enrollment of 1894.

As to the Official Census: That of 1890 determined the population to be 1 208 669; that of 1892 fixed it at 1 438 010—a gain of 18.9 per cent. Two years later the enumerators claimed to have found only 1 567 727—a gain of 9 per cent., or less than one-half that of the preceding two years.

An analysis of this census by wards shows that the First, Second, Seventh, Seventeenth, Eighteenth, Nineteenth, Twenty-first, Twenty-fourth and Thirty-third wards are charged with an average loss of 7.6 per cent. since 1892; that the Eighteenth ward has 8.4 per cent.—the Seventeenth, 8.8 per cent.—the Thirty-third, 9.5 per cent.—the Seventh 10.2 per cent.—and the First, 27 per cent. less population than two years previous.

Nor is this apparent loss to be accounted for by any shifting of population; the discrepancies in the returns from adjoining wards show clearly that these apparent losses are the result of defective enumeration. Thus, the First, Second, Third and Fourth wards are contiguous territory, extending along the Lake front south from the Chicago river to 39th street, a distance of four miles; except the first mile, which is the business district comprised in the First ward, the territory is almost exclusively a residence district—the business lines extending uniformly through the different wards. But the First and Second wards show an apparent loss of 17 per cent; the Third a gain of 12.6, the Fourth a gain of 7.8; while the Thirty-second—continuous with the Fourth and substantially similar in all respects—shows a gain of 19.5 per cent.

Like discrepancies are to be found in every part of the city. Thus, the Twentieth and Twenty-first and the Twenty-third and Twenty-fourth wards are divided east and west only by arbitrary north and south lines, with the Twenty-second ward lying south of the Twentieth and Twenty-first and north of the Twenty-third and Twenty-fourth. The occupancy of this area shades from the best residence region in the east to "slum" districts in the west, but there is no sharp dividing line. This census, however, shows a loss of about 2 per cent. of population east of the arbitrary ward lines and a gain of 15 per cent. west of these lines.

Similarly as to the area comprising the Eleventh to Nineteenth wards inclusive, lying west of the North and South branches, south of Belmont avenue and north of West Twelfth street. This is a homogeneous territory of working people, but the movement of population as shown by this census indicates the most incongruous and incredible changes. Adjoining areas precisely similar in every respect except their numbers as wards and their arbitrary boundary lines show losses of 8.8 per cent. and gains of 19.6 per cent. as the extremes.

It is obvious that the personal equation figures to an unusual extent in the Official Census of 1894.

It should be noted in this connection that no burial or removal of a dead body can take place in Chicago without a permit from the Department of Health based upon a physician's certificate of the cause of death. It follows, therefore, that all deaths occurring in the city are recorded with at least as substantial accuracy as obtains in the other registration cities of the United States with which Chicago may be compared.

It has seemed worth while to be thus explicit upon this point and to accept the minimum population of the Official Census in fixing the death rate since the phenomenal healthfulness of the city continues to be the theme of incredulous comment by less favored localities.

The following table of populations, deaths and death rates of 1894 in all cities of the United States having populations of more than 200 000 inhabitants is compiled from the latest and most authoritative information available and is submitted for purposes of comparison—the cities being arranged in numerical order of lowest death rates:

CITIES.	Claimed population.	Total reported deaths.	Annual death rate per 1 000.
1. Chicago	1 567 727	23 892	15.24
2. Detroit	275 000	*a*] 4 260	15.49
3. Milwaukee	270 000	4 243	15.71
4. Cleveland	325 000	*b*] 5 155	15.86
5. St. Louis	540 000	8 710	16.13
6. Buffalo	315 000	5 280	16.76
7. Pittsburg	272 000	4 943	18.17
8. Philadelphia	1 139 457	20 837	18.28
9. Cincinnati	325 000	5 945	18.29
10. San Francisco	330 000	*c*] 6 220	18.85
11. Baltimore	496 315	9 486	19.11
12. Brooklyn	1 055 000	21 255	20.14
13. Washington	290 000	5 868	20.23
14. New York	1 957 452	41 175	21.03
15. Boston	501 107	11 520	22.99
16. New Orleans	275 000	6 843	24.88

a] November and December estimated. *b*] June and July estimated. *c*] November estimated. Reports for these months have not been received and the estimates are made on the averages of other months.

In this aggregate population of 9 934 058 the total deaths were 185 632—an annual rate of 18.68 per thousand of population. But the five Lake cities—Chicago, Detroit, Milwaukee, Cleveland and Buffalo—with about 30 per cent. of the aggregate population had an average death rate of only 15.56 in the thousand as against a death rate of 19.88 in the thousand of population of the remaining eleven cities. And four of the Lake cities—those first enumerated—had death rates of less than 16 per thousand, ranging from 15.24 to 15.86.

An urban death rate and especially a Chicago death rate of less than 18 per thousand has been pronounced incredible by the highest statistical authority in the country and it remains to be seen what the reply will now be to what Virchow would call the "brute force" of these aggregate figures. The only recourse seems to be to charge the five Lake cities with a conspiracy of mingled suppression of death returns and exaggeration of population figures.

Meanwhile the effects of the climatic conditions of the Great Lakes region upon health and life are obviously worthy of more attention than they have yet received from the sanitary climatologist and demographer.

A SANITARY BALANCE SHEET.

The story of the year's work in the Department is fully told in the subjoined Reports of Divisions and Bureaus. Such comment on these as seems needful is reserved for subsequent pages. Of more immediate interest is a forecast of future work.

How may the Department best help to maintain if not to increase the present enviable reputation of the city for healthfulness? By what means may the death rate be still further reduced? What removable obstacles exist to the prevention of premature death, to further length of days and to increase of the bodily health and mental vigor which have already made Chicago the Wonder City ?

In seeking answers to these questions it has been attempted to "take an account of stock," so to speak ; to sum up and compare the different causes of disease and death in Chicago during a period of years and so to learn in what respects we are steadily and gratifyingly improving and in what respects and to what extent the reverse obtains. The striking of such a sanitary balance-sheet should indicate the lines on which the Department needs strengthening, the directions in which its uses may be best employed and the agencies, if any, which are lacking for a better conservation of the public health.

It is believed that, in what immediately follows, it will be seen that the attempt has already repaid the labor bestowed upon it and that broad foundations have been laid for the future policy and development of the Department.

Although a city board of health for Chicago was created, on paper, in 1834 there is no record of its proceedings extant. Dr. RAUCH says: "Whether the board ever met or not we do not know, as no minutes remain to tell of its doings. It is but fair to assume that if anything worth preserving was done it would have been recorded in some way or another;" and again in 1850: "Heretofore no record of the proceedings of the board was kept or at least none can now be found and for information relative thereto we are dependent on other sources." [*a*

From these "other sources" prior to 1851 and from the official records since that year it is computed that the aggregate of the yearly populations of the city of Chicago during the half century, 1845–1894 inclusive, was 19 266 065 and the

---

a] Sanitary History of Chicago: 1833–1870. By John H. Rauch, M. D. Pp. 13, 23.

aggregate deaths reported were 412 067, giving an average annual death rate during the fifty years of 21.38 per 1000 of population. The average annual death rate of the first ten years of this period was 42.35 per 1000; of the second decade was 23.74; of the third was 23.56; of the fourth was 20.50, and of the last decade was 18.39. The death rate of the fifth decade was 56.6 per cent. less than that of the first—a reduction of considerably more than one-half. [a

In 1851 the first city board of health of which records have been preserved was established and the first attempt was then made to secure a registration of vital statistics. A Chronological Summary of Chicago Mortality has been compiled from these records and from other available sources covering in a series of tables the principal causes of death from that year down to the end of 1894, a period of forty-four years. These tables set forth the number of deaths reported each month—the total number for each year—the percentage of the total mortality—and the death rate per 10 000 of population from—

Asiatic cholera,
Bright's disease,
Bronchitis,
Cancer,
Cholera infantum,
Consumption,
Croup,
Diarrhea,
Diphtheria,
Dysentery,
Heart diseases,
Malarial fevers,
Measles,
Nervous diseases,
Pneumonia,
Puerperal fever,
Scarlet fever,
Smallpox,
Typhoid fever,
Typhus fever,
Whooping cough.

Constructed upon these tables—which are to be found in the Appendix, pages 244-264, inclusive—are a set of diagrams showing graphically the fluctuations in the prevalence of each of these diseases during the entire period and down to the

---

[a] What this means will be more fully appreciated by a moment's consideration of the following figures: The aggregate population of the city during the ten-year period just ended was 10 930 772—an annual average of 1 093 077; the total deaths during the period were 201 117—an annual death rate of 18.39 per thousand. Had the same death rate prevailed during this period as did during the first decade, 1845–1854, there would have been 462 918 deaths and the population of the city in 1894 would have been 261 801 less than even that shown by the Official Census, or only 1 305 925.

close of 1894. From such study of these as there has as yet been opportunity to make the appended composite diagram has been framed. It needs little explanation and its lesson is obvious. [*a*

The group of diminishing diseases—those diseases whose death rates are generally diminishing—comprises the maladies whose prevalence and fatality are known to be increased by a wet soil, defective drainage, impure water, municipal and domestic uncleanliness; and the death rates from this group have been reduced by raising the city level, by establishing a system of sewerage, by introducing a pure water supply and by improvement in public and personal hygiene. These need no further comment.

The group of diseases shown to be relatively or absolutely increasing in fatality, although only seven in number as against eleven in Group I, caused 40.6 per cent. of the total deaths in 1894, being an increase of about one and one-fourth per cent. over the average for the decade and as compared with the average for the first decade of the whole period of forty-four years the fatality of this group has increased 144 per cent.

Comparing the mortality of the first and last decades—1851-1860 with 1885-1894—the deaths from nervous diseases are found to have increased 80 per cent.; from Bright's disease, 84 per cent. [*b*; from cholera infantum, 123 per cent.;

---

a] Asiatic cholera, smallpox and typhus fever are omitted from this composite because the first and the last are practically extinct so far as Chicago is concerned; there has been no death from the former since 1873, nor from the latter since 1886. As to smallpox—that is a disease *sui generis*; there will be recurrent epidemics of it whenever the community increasingly neglects vaccination until there is a sufficiently large accumulation of the unprotected; then, when the contagion is introduced, there will be an epidemic. A health administration is responsible for the extent of such epidemic only so far, first, as it fails to push vaccination continuously by every available means; and, second, as it neglects to secure "safe and proper" hospital accommodations for the prompt isolation of every case as it occurs—a provision which the city of Chicago has never yet made.

b] The first death from Bright's disease was reported in May, 1864, but it was not until 1868 that the disease was given as a cause of death in numbers sufficient to compute rates upon. The comparison of this disease above made is, therefore, between the decade from 1868 to 1877 inclusive, and that from 1885 to 1894.

from pneumonia, 160 per cent.; from bronchitis, 330 per cent.; from heart disease, 360 per cent.; and from cancer, 812 per cent.

What can be Done to Check this Increase?

Generally speaking this group of diseases is one with which sanitary administration can do little in a direct way. Something, however, is being done and with encouraging results toward a reduction of the frightful summer mortality of infants and of the general child mortality by an increasingly stringent supervision over milk and other food supplies. General child mortality as a factor of total mortality shows a reduction of about 30 per cent. since the earliest decade, notwithstanding the much larger and rapidly increasing proportion of children in the present population; but the death rate from cholera infantum is still epidemic in its magnitude every summer.

What is needed as a remedy in this direction would seem to lie in popular education in hygiene and especially in the hygiene of infant and child life. Manifestly this can be furnished only partly by the Department. There should be some medium through which its tracts and leaflets and circulars of instruction may be brought into the homes of the poorer classes—those most needing this information—and be explained and practically applied to their daily lives. Chicago is sadly deficient in such agencies. There are, it is true, some noble philanthropies of the kind; but Hull House and Armour Mission and Visiting Nurses and the Fresh-Air Sanitarium and Kitchen Gardens and Cooking Schools need to be multiplied many times over, and some of them materially modified in their methods, before any adequate impression will be made upon the mass of ignorance which now knows not the saving virtue of personal and domestic cleanliness, of temperate habits and the laws of health—with especial reference to the diet, clothing and care of infants and children.

The sterilized-milk charity, which has done so much to save child-life and to educate mothers in New York City is only in its infancy in Chicago. The most magnificent park system in the world with boundless potencies of sanifaction in hot weather has one solitary shelter where a mother may take her ailing infant and be taught the needs of the frail organism and how to minister to them. The Kitchen Gardens and Cooking Schools are alien to the slum life, which needs to have its soap and its salvation alike carried to it and rubbed into it.

The Department should have the moral support and material aid of an efficient Auxiliary Sanitary Association, such as exists in almost every other large city, with branches and working members in every ward and precinct and in every block of the tenement-house and slum districts. "Poverty and shame shall be to him that refuseth instruction;" but what if the instruction be withheld and if the poverty, which is the destruction of the poor, prevent their seeking it? "A faithful ambassador is health," and there is crying need of such ambassadors in every quarter of this great city.

For any material progress in the line of checking the increase or reducing the prevalence and fatality of the other diseases of Group II reliance must be placed chiefly on the medical profession. It is, of course, to this profession that all important advances in sanitary science and preventive medicine are due and the work recently done in demonstrating the contagiousness of consumption, for example, and in defining methods for its restriction is promise of similar results with, probably, pneumonia and cancer.

Evidence is accumulating of the infectious nature of pneumonia and of the feasibility of limiting its epidemic and endemic spread. Its increasing prevalence in Chicago is chiefly due no doubt to increasing density of occupancy with consequent soil and air pollution; and this points among other things to the necessity for the exclusion of sewer emanations from dwellings by perfect plumbing. Sudden alternations of temperature are beyond control, but many lives would be saved by inculcating the knowledge that the most common cause of pneumonia is "catching cold," with the obvious lesson of greater care in clothing, etc., during inclement weather—to which should be added an effective demand for proper protection and warmth in street cars from early fall until late spring and daily disinfection of these vehicles at all seasons.

The enormous increase of cancer—812 per cent, in 44 years—and its incurability in almost all its forms lend especial interest to the researches of the past few years which strengthen the theory of its infectious character. The defining of "cancer areas," "cancer fields" and "cancer houses" and the tracing of an apparent connection between cases of cancerous diseases occurring in groups already indicate the necessity for preventive measures, such as the disinfection of discharges, dressings, etc., in the treatment and care of cancer patients and of the premises after death. In this, as in the sanitary care of cases of consumption or pneumonia, the health officer can do little in the present attitude of the professional and the public mind. He cannot take the initiative in the segregation of these patients nor in the enforcement of measures of disinfection; neither the profession nor the public is as yet educated up to this point. But he may and should be prepared to take charge of premises infected by the contagion of these diseases and to employ the other resources of sanitary science at the request of the attending physician or of the family.

Some considerable proportion of the increase in deaths from bronchitis is obviously due to the increasing proportions of the population at the age-periods of greatest susceptibility to this disease—namely, the young and the aged. Another cause of the increase may be found in the increase of diseases of the heart and of Bright's disease, both of which predispose to the onset of bronchitis and of pneumonia. There still remains, however, an excess which may be best controlled by the family physician through advice on clothing, exposure, over-heated apartments, etc., and especially to mothers on the care of children during cold and damp weather and to convalescents and others of enfeebled constitutions.

As to the remaining diseases of this group, returns of deaths from diseases of the heart are swollen to an undefined extent by misleading certificates of the causes of death, notably in diphtheria cases—an evil which the Department cannot wholly correct. But even with this deduction it is certain that deaths from inflammatory affections of the heart (rheumatic) and from degenerative changes in the organ (chiefly fatty) are seriously increasing. Sanitary administration can do little with these diseases or with the increase of Bright's disease and of diseases of the nervous system. The high tension of modern life—nowhere higher than here in Chicago—with its besetting temptation to irregular habits and to excesses of various kinds and its great strain upon the most complex and most important mechanism of life is something that the sanitarian can but recognize and regret; its relief and remedy will come only through saner views and modes of life.

And yet, notwithstanding this increase of what have been called the "American diseases" the sheet shows a satisfactory balance on the credit side of the mortality ledger. Such sanitary investments as the city has made are paying an hundred-fold and a thousand-fold. The strictly preventable diseases are diminishing in such ratio as to more than offset the increase of those which are beyond the field of preventive medicine and the general death rate is being thereby steadily reduced.

The local disadvantages as to site, which in the early days negatived the favorable climatic conditions general to the Lake region, have been overcome and remedied; malaria has been practically wiped out; the diseases caused or aggravated by impure water are rapidly disappearing; consumption, "the great white plague," which annually causes one-eighth of all deaths in the United States, is diminishing; and the general death rate has fallen to less than one-half that of fifty years ago. [a

As has been before remarked, the climatic advantages of the Great Lakes region are worthy of more study than they have yet received. Whether due to the equilibrating effects of these great inland seas upon temperature, to the purifying agency of their excess of oxygen, to the sensible electrical state of the atmosphere usually to be observed, or to all these and other causes not yet recognized, certain it is that the group of cities lying on the shores of the Great Lakes are more healthful than any similar aggregate of communities in the world. And Chicago has reason to exult that in this select group she is queen paramount.

With the natural and artificial advantages that—again to paraphrase the language of EDMUND PARKES—tend to render growth more perfect, decay less rapid, life more vigorous,

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a] In the Mortality Statistics of the last National Census, Chicago is rated sixth in a list of forty-five registration cities as to least consumption mortality. Keokuk, Ia., having the greatest rate—206 per 1000 of all deaths, and Chicago, 84 per 1000, this city being excelled in this respect only by Detroit, St. Paul, Omaha, Davenport and Cleveland. Among these 45 cities, selected by the Census Bureau as having fairly trustworthy registrations of deaths and their causes, Brooklyn had 113, Philadelphia, 124; New York, 135; and Boston 152 deaths from consumption in every 1000 deaths from all causes.

death more remote, Chicago's manifest destiny is a commercial supremacy vaster and more enduring than that of medieval Venice, a civic magnificence more splendid than that of the city of which a CÆSAR boasted that he "found it of brick, but left it of marble."

In furtherance of this destiny that Commissioner of Health may claim no mean share who can demonstrate that he left his city healthier than he found it.

NOTEWORTHY FEATURES OF 1894.

Of the twenty principal causes of mortality in 1894 the diarrheal diseases claimed, as usual, the largest number of victims—2936, or about one-eighth of the whole number; then followed in the order here given, the tubercular diseases—including 2155 deaths from consumption—pneumonia, diphtheria, brain diseases, convulsions, bronchitis, heart diseases, smallpox, infantile marasmus, cancer, typhoid fever, acute nephritis, chronic nephritis, puerperal diseases, cerebro-spinal fever, septic diseases, whooping cough, scarlet fever and measles. These account for 17 993 deaths out of the total 23 892 recorded for the year. Of the remainder, 1541 were from violence—a total greater than from any of the above enumerated twenty principal causes of death except the diarrheal and tubercular diseases. According to the returns made to the Department there were 256 deaths from railroad accidents and 45 from street-car accidents; but the police records and the books of the Coroner's office show that there were 354 human lives thus crushed out in 1894 within the city limits and there is reason to believe that even this figure is much too low—the return of the cause of death to the Department in many of these cases being given as "shock from surgical operation," "crushed," "fracture" of skull, spine, etc., or some other euphemism to cover up the fact of railroad slaughter.

Commenting upon this sacrifice of human life a leading medical journal since the close of the year has pronounced Chicago the "most blood-guilty city on earth" in this respect and points out, as was done in the Report of the Commissioner for 1893, that this slaughter is due to the fact that there are over 2000 miles of railroad tracks within the corporate limits of the city, with more than 3000 street-crossings at grade, over which 1400 trains run daily; and cites the fact—also stated in that Report—that in 1893 one of the railroads using the block system of signals carried nearly half a million passengers in a few weeks without injury to a single individual either on its tracks or its trains. It then adds: "And yet not only does the municipality neglect to enforce the use of the block-signal system on the railroads within the city limits, but it does not even compel the companies to maintain gates or other safeguards at every crossing, nor to employ signal men to warn of the approach of these rapidly-moving engines of death and destruction."

Pending the elevation of the railroad tracks and the abolition of the grade-crossing, the Commissioner begs to repeat the query of this journal: Is it too much to ask that, meantime, efficient guards, both mechanical and human, be placed at these surface crossings?—or, in the language of one of the leading dailies of the city, "Shall the grade-crossing slaughter go on, day in and day out, to the utter confusion of the claim that this is a civilized community?"

Another large factor of the total deaths from violence is that of suicide, and the fatal facility with which poisons may be procured is, no doubt, responsible to some extent for the large number of these deaths—294 during the year, a majority by poisons, chiefly morphine and carbolic acid. More stringent regulations concerning the sale of poisonous drugs are obviously necessary.

The death rate among the colored element of the population of Chicago is, relatively, much in excess of the mortality of the race in the country at large—which is about 50 per cent. higher than that of the white population. The Official Census fixed the colored population of the city in 1894 at 24 889, among which number there were 664 deaths, being an annual death rate of 26.67 per thousand. The white death rate—colored excluded—was 15.05 per thousand, and the excess of the colored mortality is thus seen to be more than 77 per cent. The Commissioner has no suggestion to offer in this connection; it is a recognized fact that the mortality among colored people in cities has enormously increased since the Civil War, and it is equally well recognized that the causes of this increase are beyond the scope of sanitary administration per se.

It has already been said that the epidemic of smallpox in 1894 was the "lesson of neglected vaccination," but it is as yet only imperfectly realized to what extent vaccination had been neglected for years before the outbreak. It was known in a general way long before the close of the year that there was an unusual proportion of unvaccinated subjects among those attacked with the disease; but even the diagnosticians, inspectors and vaccinators of the Department in daily contact with the work were unprepared for the returns from the hospitals after the close of the year which showed that 59 per cent. of all cases received and treated were unvaccinated. There is nothing on record at all approaching this proportion in any country where vaccination is recognized. It revealed even a worse condition of the population, as to vaccination, than in the epidemic of 1881–83—the worst that ever afflicted the city in point of numbers, duration and fatality. But even in that epidemic only 43 per cent. of those attacked were unvaccinated, while the usual proportion in communities where vaccination is enforced ranges from 21 to 23 per cent.

These figures have more significance for the sanitarian and health officer than for the general public, to whom it will mean more to learn that in a population of, say, 1 600 000 people there were used nearly 1 200 000 vaccine points in free vaccinations; that only about 18 per cent. of those examined by the inspectors and vaccinators on their first inspections were found satisfactorily vaccinated; that out of a school population of nearly a quarter of a million—including 5000 teachers—30 per cent. of the public scholars and 22 per cent. of the parochial required vaccination or revaccination.

Details of this work are given very fully in the appended reports of the Chief Medical Inspector, Dr. GARROTT, and the Medical Inspectors, Drs. SPALDING, BENSON and CHAPMAN, while the clinical features of the epidemic and complete statistics are to be found in the reports of the hospital physicians, Drs. H. S. WARREN and J. FRANKLIN ADAMS. It is not necessary, therefore, to rehearse these subjects in this connection, but there is submitted instead the following

MEMORANDA CONCERNING THE SMALLPOX OUTBREAK OF 1893–94.

FIRST. The outbreak was foreseen, and precautionary measures begun before the appearance of the first case of smallpox, June 12, 1893. By the end of May of that year more than two-thirds as many free vaccinations had been performed as the average yearly total of the three preceding years, and during the year more than the aggregate of the previous ten years. The public and parochial schools were inspected and before the close of the school year, June 30, 1893, sufficient facts had been ascertained to warrant an appeal, August 4th, to parochial school authorities urging vaccination of their scholars before the beginning of the fall term; this was followed by a communication to the Board of Education, giving the results of the inspection of the public schools—stating that "many of the pupils who hold physician's certificates of successful vaccination have not the evidence of it upon their arms"—advising that the Board "insist upon it that all pupils again visit their physicians for vaccination" and saying that the indications lead to the belief that "unless unusual precautions are taken we will surely have an epidemic of smallpox this coming winter." A *Circular to the Public*, in different languages, counseling immediate voluntary vaccination, was supplemented by a proclamation of the Mayor, based on Sec. 592 of the City Ordinances, directing the enforcement of vaccination under the authority therein conferred upon the Commissioner. The entire available force of sanitary inspectors was employed in inspecting and vaccinating schools, factories and other places of employment and occupation. A total of 17 649 workplaces, employing 306 432 persons, besides all the public and parochial schools in the exposed districts, were inspected and a total of 110 820 persons were vaccinated. In December it was apparent that the warnings given in the circulars of July and in the letters of August and subsequently were well founded. Appeals were made to the City Council and pressed continuously for appropriations for the employment of additional inspectors and vaccinators; the criminally inadequate hospital facilities and the unsafe condition of the old hospital structure were set forth and authority asked to secure "safe and proper" hospital accommodations. These requests were not granted until the disease had assumed formidable proportions and it was not until April, 1894, that the employment of a sufficient number of men was authorized—although personal responsibility had already been assumed and indebtedness incurred in anticipation of such authorization. During May a force of nearly 500 vaccinators was at work in the various districts of the city and 586 500 vaccinations were performed in that month alone. This was followed by a reduction of more than one-third of the number of cases in June; in July the epidemic, as such, was substantially under control and thenceforth steadily declined until the disease lost all significance as a public health factor.

SECOND. This suppression was effected by an achievement of preventive medicine, which has been pronounced by the highest authorities unparalleled as yet in sanitary administration, to-wit, the wholesale vaccination of a population of sixteen hundred thousand people, among whom more than a million free vaccinations were performed—one-third within thirty days after authority was finally secured from the City Council for the employment of men and the purchase of material—586 500 in a single month. By the close of June, or within one year from the first case, smallpox was at an end as an epidemic disease—"a disease of unusual and increasing prevalence." In the previous epidemics such a stage was not reached until after much longer periods. In the first there were more deaths in February and March, 1865, than in October and November, 1863 (*Sanitary History of Chicago*, pp. 71, 91); Dr. RAUCH says the second epidemic, 1871–75, continued forty-seven months (1894 *Report*, *State Board of Health*, p. 334); and Dr. DEWOLF'S reports show that the third, 1880–83, lasted thirty-nine months (*Annual Reports of the Commissioner of Health*, 1881 and 1884, pp. 6, 65).

THIRD. The prevalence of smallpox among the population up to the end of 1894 was kept down to sixty per cent. of that of the lightest previous epidemic, 1871–1875, handled by Sanitary Superintendent Dr. JOHN H. RAUCH; to forty per cent. of that of 1862–1865, handled by Health Officer Charles S. Perry; and to twenty-six per cent.—*or barely more than one-fourth*—that of 1880–1883, handled by Dr. O. C. DeWolf, then Commissioner of Health.

Fourth. Neither travel nor traffic was interfered with last year on account of smallpox and the commercial interests of the city were better protected than in any previous epidemic. Threats of quarantine by neighboring States and cities were allayed and their enforcement prevented by making a frank exposition of the situation to the visiting health authorities of these States and cities and by fully explaining the work being done to prevent any spread of the contagion either by persons or merchandise.

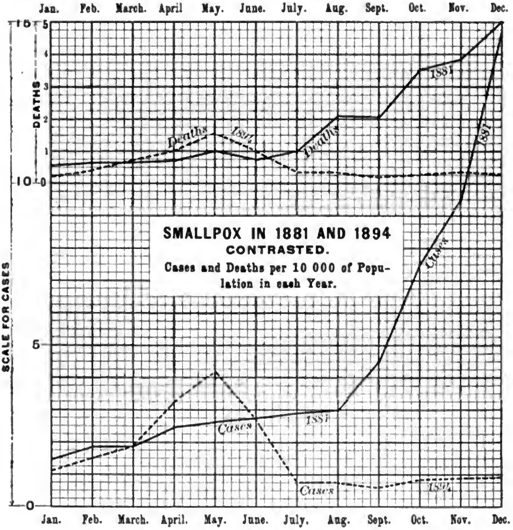
Fifth. The enormous vaccination work was performed and all cases were removed to hospital, as rapidly as additional hospital facilities were provided, without resort to force and without precipitating riot and bloodshed such as disgraced other cities during the same period, although the officers of the Department were met with frequent abuse and personal violence which required tact, patience, forbearance and courage to overcome.

Sixth. The smallpox prevalence and mortality of 1894 were only a little more than one-third of the average prevalence and mortality of the previous epidemics; the last previous one, that of 1882, was three and a half times more serious and fatal. For the corresponding years of the four epidemics the deaths per 10 000 of population were: in 1864, 16.74; in 1872, 17.80; in 1882, 23.07; in 1894, 5.58. On the scale of the previous epidemics there would have been the following mortality in 1894:

At the epidemic rate of 1864......2624 deaths.
1872......2790
1882......3616

There were, instead, 1033 deaths from smallpox in 1894.

The course of the disease, month by month, during the corresponding years (the second) of the last previous epidemic and of the present one are shown in the following diagram. Beginning in January of each year, the unbroken black lines show the steady increase in the number of cases and of deaths throughout the year 1881, ending in December at the highest point reached. The broken lines show the increase up to May, 1894, and the sudden descent of the lines through June and July indicates the effect of the previous wholesale vaccination.



SMALLPOX IN 1881 AND 1894 CONTRASTED.

Cases and Deaths per 10 000 of Population in each Year.

WORK OF THE DIVISIONS AND BUREAUS.

No attempt will be made to summarize the work of the Division of Contagious Diseases. It has been vastly the most important branch of the Department during the year and the results of its labors in a reduced death rate and in the suppression of an epidemic are its highest commendation. The qualities of courage, self-sacrifice and devotion to duty that were constantly displayed in dealing with a most loathsome disease by the physicians, inspectors and other attaches of the Division may never be recognized by the public; but the Commissioner accounts it as one of his most valued privileges that he has been associated with them in the trying experiences of the past year. In this connection it is proper, also, that mention be made of the noble women—the Poor Handmaids of Jesus at the City Hospital and the Visiting Nurses at the Emergency—who ministered to the unfortunate victims of the pestilence. There are no words at command adequate to portray the depth of the devotion, the complete abnegation of self, the moral heroism as well as physical courage required to face the repulsive scenes of misery and suffering among which these women lived night and day during the height of the epidemic. In hundreds of homes of the survivors their memories are blessed.

The Municipal Laboratory is growing in usefulness year by year. The statistics of the Bureau of Milk Inspection—a division of the Laboratory—warrant the belief that the milk now supplied to Chicago averages better, grade for grade, than that of any other large city in the country. The regulations requiring skimmed milk to be tagged and sold as such, prohibiting the use of coloring matter, water or other adulteration and forbidding slop or swill feeding of milch cows have been strictly enforced; and the results of more than 12 000 analyses of samples collected in 1894 show a marked improvement over the average of 1893. It is especially gratifying to be able to state that in this work the milk dealers themselves voluntarily and efficiently co-operate with the Department; they keep close watch upon their shippers and have frequent analyses of their supplies made in the Laboratory. The appended report of the Director, Dr. GEHRMANN, deals with the work in the bacterial diagnosis of diphtheria, the preparation of the diphtheria antitoxin, the analyses of food supplies, water, ice, etc. Mr. KENNICOTT, Chemist and Analyst of the Laboratory, furnishes a valuable report and description of the methods employed in analyses, especially of water and milk, with illustrations and descriptions of apparatus devised by himself for these purposes. A thorough sanitary inspection of the Federal building was made, under the direction of the Commissioner, in January, at the request of the Postmaster—Dr. GEHRMANN making the bacterial examination, Mr. KENNICOTT the analyses of air and Mr. ANDREW YOUNG, Chief Sanitary Inspector, conducting the tests and inspection of the plumbing and drainage. The condemnatory character of the results of these scientific inspections was effectively employed in the appeals for a new Government building for Chicago.

The Bureau of Sanitary Inspection is another of the agencies which contribute to the low death rate of Chicago. It deals with the foundations of healthy living, beginning with the construction of the dwelling-place or home—its sewerage, ventilation, lighting, air-space, plumbing and other essentials. The regulations and requirements of the Bureau, as conditions for the permit to build, have received the endorsement of leading sanitarians, architects, builders and plumbers and have been reproduced in Great Britain, Germany and even in China and Japan, while the sanitary code and practice of the Bureau have been very generally adopted throughout the south and west. The details of its work show the growth of the city and the result of its labors. Last year 12 247 inspections of new buildings were made as against 5847 in 1893; 9000 building plans were approved as against 7050 in 1893; 33 298 factories, work-shops and other places where labor is employed, with 373 298 employes, were inspected as against 17 649, with 306 432 employes in 1893. On the other hand the receipt of complaints of insanitary conditions fell from 17 187 in 1893 to 11 747 last year, and the number of notices served was reduced from 13 708 to 11 977—these figures indicating the progress of sanitary improvement. The work of the Female Tenement and Factory Inspectors in ameliorating the conditions under which women and children work and live in tenements, factories, shops and stores is one of the most useful—dealing as it does so directly with the daily lives of the toilers and bread-winners.

It is believed that more progress in the abatement of the Smoke Nuisance has been made during the past year than in any other since the enactment of the ordinance for the suppression of "dense smoke," and the action taken since the close of the year gives encouraging promise of ultimate and complete success in this direction. The conference between the city authorities and the coal dealers and operators, architects, builders, engineers and large coal consumers, held at the invitation of the Commissioner, has resulted in a better understanding among all parties concerned. The interchange of practical experience and technical knowledge and the discussion of diverse views and interests, brought about by this conference, have removed much of the friction and conflict heretofore existing between those charged with the enforcement of the ordinance and those concerned in the mining, sale and use of bituminous coal. It has been demonstrated that the low-priced soft coal, to the use of which so large a share of our industrial and manufacturing prosperity is due, may be burned with no offensive smoke production, and it only remains to formulate the principles and conditions of furnace construction and firing necessary to this end in order to secure general and willing compliance with the ordinance.

The CARTER H. HARRISON public bath continues to grow in popularity and consequent usefulness. During the year a total of 91 379 baths were given—20 334 to women and girls. The expenditure on this account was $3469.65—or less than three and three-fifths cents for each bath. Such an inexpensive aid to public health should be multiplied in every quarter of the city.

The beneficial effect of the change in the system of live stock and dressed meat inspection, by which the inspectors of the Federal Bureau of Animal Industry, those of the State Live Stock Commission and those of the Department co-operate, is seen in the tabular statements on pages 233, 234 of the Appendix — showing the amount of meat condemned at markets and at the stock yards during the year. Compared with the corresponding statements for 1893, it will be seen that there is a reduction of 20 per cent. in the amount of dressed meats found exposed for sale at the markets and condemned by the city inspectors and an increase of almost the same per cent. as given in the amount condemned by them at the Union Stock Yards. This indicates the increased rigidity of the inspection at the slaughter houses, where the inspection should, properly, be made, instead of at the markets in the city. The Federal inspection deals exclusively with stock and meats for export; the State inspection chiefly with animals affected with contagious diseases to prevent the spread of such diseases; the inspection of the Department is to prevent the sale of diseased or inferior meat on the city markets. The three branches now work in concert under uniform rules adopted July 23, 1894, ratified and endorsed by the Live Stock Exchange on the following day. The State Board pronounces the system of inspection "now as nearly perfect as is possible for a human agency to be" and "the most complete system of inspection in the United States."

The year has been a memorable one in many respects—for the Division of Contagious Diseases especially so; its task was a Herculean one, but it has been fulfilled with credit to the Department and with benefit to the city. In reviewing the past twelve months the Commissioner finds little to regret and much with which to be satisfied. With fewer exceptions than could have been anticipated under the existing conditions of civil service he has received loyal and efficient support from the force of the Department; the responsible editors and attaches of the daily press have treated him with generous consideration; citizens generally—as individuals, as employers and as organizations—have responded promptly and effectively to his requests for co-operation and assistance, and the same is true in no less degree of the members of the medical and the clerical professions. To one and all of these the Commissioner takes this opportunity to tender his sincerest thanks and to say that without this support and co-operation his administration of the health affairs of the city could not have been the success he honestly believes it to have been.

It only remains to acknowledge the valuable services of Dr. F. W. REILLY, during the latter months of the year and to whom is due especially the improvement in the form of the Vital Statistics embodied in the present report. In recognition of his sanitary attainments and experience Dr. REILLY has been appointed Assistant Commissioner of Health since the close of the year with which this report deals.

Respectfully submitted:

ARTHUR R. REYNOLDS, M. D.,
Commissioner of Health.

THE WATER SUPPLY OF CHICAGO: ITS SOURCE AND SANITARY ASPECTS.

I. At the Close of September, 1893, by Arthur R. Reynolds, M. D., and Allen Hazen, S. B., Chemist, Water Department, World's Columbian Exposition.

II. At the Close of 1894, by Arthur R. Reynolds, M. D., Commissioner of Health of the City of Chicago.

I. The Water Supply of Chicago, at the Close of September, 1893 [a.

Chicago, at this date [September 30, 1893], receives its water supply from Lake Michigan through tunnels at four different points—Lake View, Chicago avenue, Fourteenth street and Sixty-eighth street—varying from one to four miles in length. Within a few months extensions now in course of construction at Lake View on the north and Hyde Park on the south will be completed and no water will be received in the city from a source nearer than two miles from the shore.

The first tunnel constructed was at Chicago avenue, was five feet in diameter and completed March 25, 1867. A seven-foot tunnel parallel to the first was completed July 12, 1874, each two miles in length, to an intake common to both.

The Hyde Park tunnel, seven feet in diameter and extending one mile, was completed July 22, 1885, and has been the only source of supply at that point since.

The Lake View tunnel, six feet in diameter and extending one mile into the lake, was completed April 5, 1892.

The four-mile tunnel at Fourteenth street was completed December 8, 1892. It consists of two tunnels, each six feet in diameter, extending two miles to join an eight-foot tunnel extending to the four-mile crib.

The capacities of the tunnels in twenty-four hours are as follows:

Chicago Avenue	130 000 000 gallons
Sixty-eighth street	72 000 000
Lake View	72 000 000
Fourteenth street	140 000 000
Total	414 000 000

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a] A paper prepared during the World's Columbian Exposition to counteract the effects of widespread sensational misstatements concerning the character of the water supply of Chicago.

From the Chicago avenue works to the Twenty-second street pumping station, there is a tunnel seven feet in diameter and four miles in length, passing under the Chicago river and the South branch, which is intersected at Harrison street works by a seven-foot tunnel from the Fourteenth street works.

The water is pumped into the mains by twenty-six engines, as follows:

6	pumps at Chicago avenue, with a capacity of	96 000 000 gallons
9	at Sixty-eighth street, with a capacity of	77 000 000
2	at Twenty-second street, West Side, with a capacity of	60 000 000
3	at Fourteenth street, with a capacity of	54 000 000
2	at Central Station, Harrison street, with a capacity of	36 000 000
4	at Lake View, with a capacity of	30 500 000
	Total	353 500 000

The water from the Lake View works supplies Lake View—the Twenty-fifth and Twenty-sixth wards and part of Jefferson—and the Twenty-seventh ward.

The Hyde Park works supply Hyde Park and the Town of Lake—wards Twenty-nine to Thirty-four. The old city is supplied from Chicago avenue and from Fourteenth street, with a main leading from Fourteenth street tunneled under the river to the Town of Lake—wards Twenty-nine, Thirty, Thirty-one. All, however, are so constructed that the water from Lake View may supply Hyde Park and vice versa.

Before the construction of the Fourteenth-street and the Lake View tunnels Lake View was supplied by water taken from the lake through several iron pipes laid upon the bottom of the lake and extending from 1400 to 2000 feet into the lake, about fifty feet apart.

With the great growth of the city, the Chicago-avenue tunnels were not sufficient to furnish water for the Harrison and Twenty-second street pumping works, so that some six years ago [1887] a short additional tunnel was extended 3000 feet at Chicago avenue for fire emergencies, which at various times during those years, particularly in 1892, was in use in common with the two-mile tunnel, but is now permanently closed.

From Belmont avenue north, sewers empty into the lake every half mile. The largest of these is at St. Lawrence avenue, one-half mile north of the Lake View pumping station.

On the South Side. at Twenty-second, Thirty-fifth, Forty-third, Fifty-first, Fifty-sixth and Seventy-first streets, sewers empty into the lake, while all other sewers empty into the river.

During times of freshet there is a current in the river to the lake, which, of course, carries sewage with it, consequently water taken from the shore intake at Chicago avenue must be more or less polluted with sewage. The same will apply to the old intake through the iron pipe at Lake View.

From the junction of Fullerton avenue and the North branch of the river there is a tunnel extending to the lake through which water is pumped into the North branch, and which has a capacity of 147 750 000 gallons per twenty-four hours and is used to flush that branch of the river when required.

At the junction of the South branch of the Chicago river and the Illinois and Michigan canal there is a pumping station which pumps water from the South branch into the Illinois and Michigan canal, which conducts it south to the Illinois river and ultimately to the Mississippi river. These works are now pumping 407 936 000 gallons per twenty-four hours, and the capacity will soon be increased. These pumping works, except in times of heavy rainfall, will, because of the sluggish character of the Chicago river, produce a decided current in it from the lake towards the pumps, so that it is only in times of freshet that the Chicago river flows into the lake.

The extensions of the various tunnels within the past two years have undoubtedly secured for the city a water less liable to sewage pollution than was formerly obtained. The available analyses of the water are perhaps inadequate to accurately measure the improvement, but fortunately we can apply that most satisfactory of all water tests, the typhoid-fever death rate test.

The improvements in the water intakes have not all been made at a single date, but if we compare the two years ended September 30, 1892, and September 30, 1893, we find that during the earlier year the shore intakes at both Lake View and Chicago avenue were in common use, while the four-mile tunnel was not yet opened; while for the greater part of the latter year the shore inlets were entirely closed and the four-mile tunnel at Fourteenth street and the one-mile tunnel at Lake View were in use.

The total number of deaths from typhoid fever by months since 1890 is shown by the following table:

TABLE SHOWING DEATHS FROM TYPHOID FEVER IN CHICAGO BY MONTHS.

Month	1890	1891	1892	1893
January	53	67	311	41
February	136	61	187	30
March	103	71	76	41
April	45	136	56	58
May	32	408	70	56
June	107	167	55	60
July	86	200	211	55
August	115	182	179	76
September	95	198	138	86
October	72	171	92	
November	67	150	67	
December	47	186	47	
Total	1008	1997	1489	503

The improvement in the death rate from typhoid fever with these changes in the water supply is well shown by the following table of the death rates in the various wards of the city and in public institutions for the two years:

TABLE SHOWING DEATHS FROM ALL CAUSES AND FROM TYPHOID FEVER BY WARDS, FOR THE TWO YEARS ENDED SEPTEMBER 30, 1892, AND SEPTEMBER 30, 1893.

WARD.	YEAR ENDED SEPT. 30, 1892.			YEAR ENDED SEPT. 30, 1893.		
	Deaths from all causes.	Deaths from typhoid fever.	Per cent. of deaths from typhoid fever.	Deaths from all causes.	Deaths from typhoid fever.	Per cent. of deaths from typhoid fever.
1	329	9	2.73	320	4	1.25
2	439	20	4.56	451	9	2.00
3	498	34	6.83	483	9	1.86
4	424	20	4.72	437	10	2.29
5	967	79	8.17	843	20	2.37
6	1133	73	6.44	1136	36	3.17
7	712	43	6.04	680	19	2.79
8	682	32	4.69	682	13	1.91
9	912	56	6.14	850	26	3.06
10	1019	60	5.89	1180	34	2.88
11	587	37	6.30	494	16	3.24
12	863	59	6.84	966	21	2.17
13	704	43	6.11	686	23	3.36
14	868	62	7.14	880	23	2.61
15	960	73	7.60	995	25	2.51
16	1306	97	7.43	1187	24	2.02
17	594	43	7.24	438	8	1.83
18	413	20	4.83	375	8	2.13
19	969	40	4.13	931	11	1.18
20	457	42	9.19	392	13	3.32
21	546	38	6.96	511	13	2.54
22	614	40	6.51	523	13	2.48
23	831	68	8.18	657	16	2.43
24	369	28	7.59	332	6	1.81
25	418	24	5.74	423	11	2.60
26	710	38	5.35	654	19	2.90
27	188	12	6.38	226	7	3.10
28	257	8	3.52	230	4	1.74
29	629	24	3.81	704	16	2.27
30	1168	52	4.46	1441	34	2.36
31	439	23	5.24	597	11	1.84
32	464	25	5.39	507	12	2.37
33	621	33	5.31	832	22	2.64
34	632	35	5.55	670	23	3.43
Pub. Institutions.	2404	400	16.64	2331	153	6.56
Coroner's cases	1550	....	....	1933	....	....
Total for entire city	26 646	1790	6.72	26 977	712	2.64

It is most unfortunate for this comparison that the old supplies were partially in use during the first two months of the latter year before the four-mile tunnel was opened, and we may believe that if this had not been the case the comparison would have been still more favorable to the improved supply.

It is a well-known fact that people using a water supply to which they are not accustomed, are often more susceptible to any infection which it may contain than are those using such water regularly. A striking illustration of this was furnished by Philadelphia in the Centennial year when the typhoid death rate was nearly doubled, while in Chicago, the present year [1893] for the first five months of the World's Fair period, the rate has been less than half as high as for the corresponding months of the preceding year, and for the entire years under consideration. In spite of the vast numbers of visitors continually present in Chicago, there has been a reduction of over sixty per cent. in the typhoid percentage rate.

The mortality percentages from typhoid fever for the two years as given above, have been put upon two maps of the city, showing the water intakes and sewer outlets in use for the respective years. See maps on the following pages.

The reduction of over sixty per cent in the death rate from typhoid fever in one year is most striking, and it can hardly be doubted that the improvements in the water supply have been the chief, if not the only, cause in this gratifying reduction.

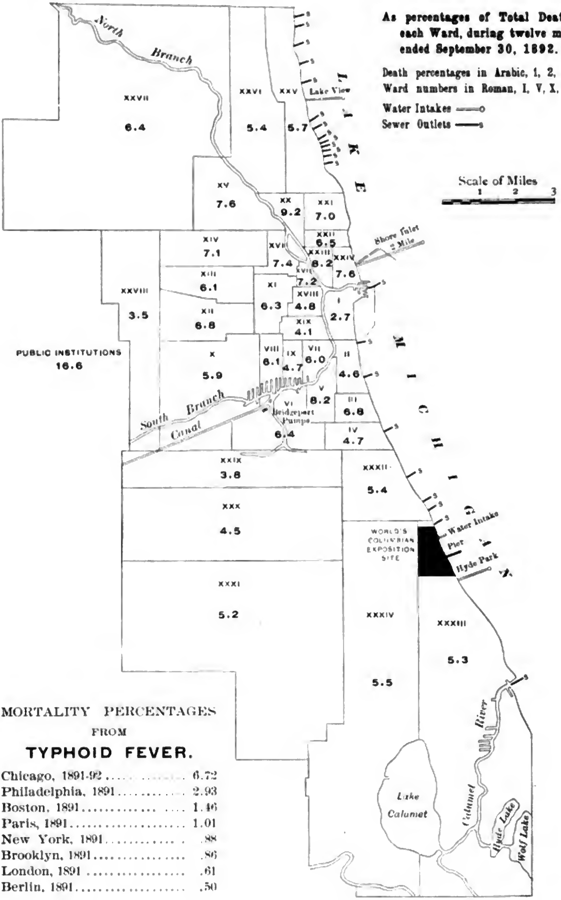
It is to be noted particularly that there is no very marked local distribution of the disease. In the earlier year there was not a ward in the city without an excessive rate. The so-called best wards suffered almost equally with the poorer wards, and the wards on the lake shore were not more favored than those along the Chicago river. The only general difference to be observed was that those wards supplied with water from the Hyde Park intake, had somewhat lower rates than the rest of the city, and during the past year, with the improved condition of the other intakes, this difference has disappeared.

As there is no marked local distribution of the typhoid fever, so there were no exceptions to the general improvement with better water supply. There was not a single ward in the city which did not show a substantial reduction, although as might be expected with such a complex problem the percentages in the different wards varied somewhat.

The lessons of the maps may be summed up as showing a general cause of typhoid fever in the city only slightly affected by local conditions, and a general improvement in the death rate with improved water supply without any local exceptions whatever. Stronger evidence could hardly be produced, even if additional proof was required, to show the causal relation between the contamination of the water supply and the prevalence of typhoid fever.

[A table showing mortality percentages from typhoid fever in a number of cities for the last years for which the authors had data is here omitted, and reference is made to a more complete table in Part II.]

SANITARY MAP OF CHICAGO: SHOWING TYPHOID-FEVER DEATHS



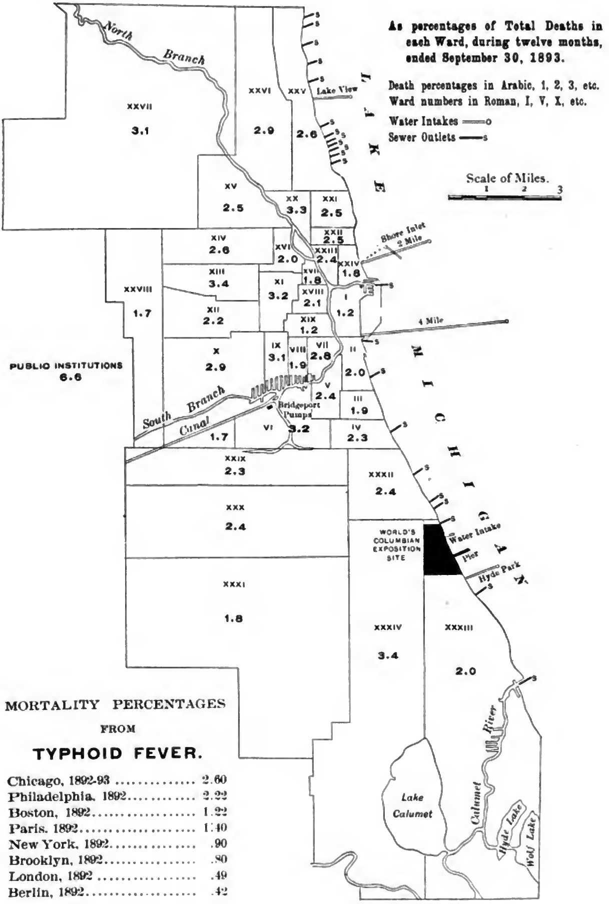
As percentages of Total Deaths in each Ward, during twelve months, ended September 30, 1892.

Death percentages in Arabic, 1, 2, 3, etc.
Ward numbers in Roman, I, V, X, etc.

MORTALITY PERCENTAGES
FROM
TYPHOID FEVER.

Chicago, 1891-92	6.72
Philadelphia, 1891	2.93
Boston, 1891	1.46
Paris, 1891	1.01
New York, 1891	.88
Brooklyn, 1891	.86
London, 1891	.61
Berlin, 1891	.50

SANITARY MAP OF CHICAGO: SHOWING TYPHOID-FEVER DEATHS



As percentages of Total Deaths in each Ward, during twelve months, ended September 30, 1893.

Death percentages in Arabic, 1, 2, 3, etc.
Ward numbers in Roman, I, V, X, etc.
Water Intakes ═══o
Sewer Outlets ——s

MORTALITY PERCENTAGES

FROM

TYPHOID FEVER.

Chicago, 1892-93	2.60
Philadelphia, 1892	2.22
Boston, 1892	1.22
Paris, 1892	1.40
New York, 1892	.90
Brooklyn, 1892	.80
London, 1892	.49
Berlin, 1892	.42

II. THE WATER SUPPLY OF CHICAGO AT THE CLOSE OF 1894.

During the past year, 1894, the shore intakes have remained closed, the four-mile tunnel has been utilized to its full capacity, and the extension of the Hyde Park tunnel to two miles has been completed. Frequent chemical analyses and bacterial examinations made in the Municipal Laboratory of samples drawn from city hydrants and at the different pumping stations show that, in the conservative phrase of the Laboratory Director, Dr. GEHRMANN, "the character of the water is that of a usable drinking water." On several occasions after rainfalls and storms followed by winds which carried the shore-water toward the intakes, the number of bacteria found in samples from the Hyde Park and the Lake View tunnels have been in excess of the safety limit—one thousand to the cubic centimeter—and this also occurred on one occasion in samples collected, September 20, from the Chicago avenue pumping station. There were also found, especially in May and June, occasional indications of an excess of organic matter, although the chlorides, significant of sewage contamination, never reached the danger line. On the other hand, the water from the four-mile tunnel has been uniformly not merely a "usable" but a *pure* water as classified by analysts.

There is obvious need for more four-mile tunnels. In advocating a further extension of the water service His Honor, the Mayor, recently used the following language:

> To the extent that the city supplies water for fire protection. to render its system of sewerage efficient and to guard against disease it is discharging one of its most important governmental functions. A failure to discharge this duty in such a manner as to fairly meet the constantly increasing dangers created by increasing population would be productive of such wide-spread evil as could be excused upon no other ground than an entire lack of funds available for that purpose.

The financial argument is, of course, a most potent one; but, if human life has any pecuniary value, it can be demonstrated that more than double the cost of the four-mile tunnel has already been saved to the city of Chicago—that, in fact, there should be placed to its credit December 31, 1894, at the end of its second year of duty, a very large balance over and above its cost of construction.

During the three years from January 1, 1890, to December 31, 1892—about which latter date water was first let into this tunnel—Chicago had an average annual death rate from typhoid fever of eleven and one-half in every 10 000 of population. In 1893—that is, during the first year's duty of the tunnel—this rate was reduced to four and one-fifth in 10 000, and in 1894 it was still further reduced to three and one-tenth in 10 000.

Up to the close of 1892 Chicago had, year after year, the highest typhoid death rate of the seventeen principal cities of the Union—all those having populations of 200 000 or over. During the year just ended the city has climbed the scale of healthfulness in this respect until it now ranks tenth among the seventeen, with a death rate from typhoid fever of 3.14 per 10 000 of population—being outranked only by New Orleans, 3.0; Milwaukee, 2.5; Cleveland, 2.2; New York, 1.6, and Brooklyn, 1.5, and outranking Washington, 8.1: Buffalo, 5.7; Pittsburgh, 5.6; Cincinnati, 5.2: Louisville, 5.0; Baltimore, 4.8; Minneapolis, 4.6; St. Louis, 3.5 and Philadelphia, 3.8.

And while the greater or lesser prevalence of typhoid fever is generally accepted as an indication of the character of the water supply, it is by no means the only disease whose prevalence is increased by impure water. The diarrheal diseases are similarly affected and these cause in the aggregate a larger number of deaths than typhoid. In the four years, 1890–93 inclusive, there were 7803 deaths from the diarrheal diseases, exclusive of cholera infantum—a yearly average of 1951. Last year there were only 604 deaths from these causes—a reduction of more than two-thirds. If the same death-rate had obtained from typhoid fever and the diarrheal diseases in 1894 that obtained in 1890–91–92 and '93, there would be 2153 persons less living in Chicago than there were at the close of 1894.

Sanitarians and social economists estimate the value of a human life to the community at $5000, and this estimate is accepted by the legislatures of many States in fixing the penalty upon railroads for killing people outright. If this amount—$5000—be multiplied by the number of persons spared by typhoid and diarrheal diseases—2153—it makes an aggregate of $10 765 000 as against the cost of the tunnel construction—three and a half millions—leaving a balance of $7 265 000 to the credit of an improved water supply.

Enormous as this sum appears it tells only a part of the story. For in this computation no account is taken of a still larger element. Each death from typhoid represents probably 20 cases—19 of whom recover and are never mentioned in statistics; each death from the diarrheal diseases similarly represents probably 40 cases—say an average of 30 cases to every death reported from these diseases. If, then, an improved water supply for Chicago has prevented 2153 deaths from these causes it has also prevented nearly 65 000 non-fatal cases of sickness from the same causes, and an aggregate of human misery and suffering which it is not possible to compute on any basis of dollars and cents.

The improvement of the general health already effected by the improvement of the water supply must be maintained by bringing the standard of all the tunnels up to that of the four-mile if Chicago is to hold its present reputation for pre-eminent healthfulness.

From a blue print of Typhoid-Fever Statistics of the principal cities of the United States and Europe, kindly furnished by Mr. John W. Hill, C. E., of Cincinnati, the following tabular showing has been compiled—the data wanting on the blue print for Baltimore and Milwaukee for 1894 having been obtained direct from the authorities of those cities. This table takes the place of the one referred to at the close of the preceding paper.

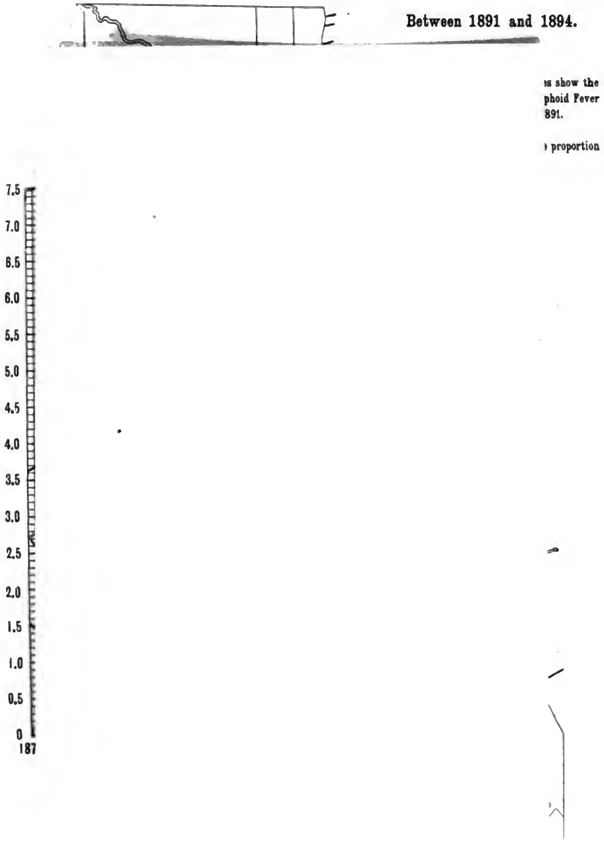
The diagram showing the fluctuations of typhoid fever in the four principal cities for twenty-five years is a prolongation of one prepared by Messrs. SEDGWICK and HAZEN, in 1892.

TYPHOID FEVER MORTALITY OF PRINCIPAL AMERICAN CITIES: 1890-1894; ARRANGED IN NUMERICAL ORDER OF LOWEST RATES FOR EACH YEAR.

1890.			1891.			1892.			1893.			1894.		
Numerical order.	CITIES.	Deaths per 10 000 of population	Numerical order.	CITIES.	Deaths per 10 000 of population	Numerical order.	CITIES.	Deaths per 10 000 of population	Numerical order.	CITIES.	Deaths per 10 000 of population	Numerical order.	CITIES.	Deaths per 10 000 of population
1	Detroit	1.8	1	Detroit	1.3	1	Brooklyn	1.7	1	New Orleans	1.5	1	Newark, N. J.	1.5
2	New Orleans	1.97	2	Brooklyn	2.	2	New Orleans	2.1	2	Brooklyn	1.7	2	Brooklyn	1.52
3	Dayton, O.	2.	3	New York	2.2	3	New York	2.2	3	New York	2.	3	New York	1.7
4	New York	2.1	4	New Orleans	2.3	4	Boston	2.9	4	Covington, Ky.	2.7	4	Dayton, O.	2.
5	Brooklyn	2.6	5	St. Louis	3.	5	Milwaukee	3.1	5	Newark, N. J.	2.8	5	Milwaukee	2.5
6	Providence	2.9	6	Dayton, O.	3.2	6	San Francisco	3.42	6	Boston	3.	6	Detroit	2.6
7	Milwaukee	3.3	7	Boston	3.29	7	Buffalo	3.43	7	San Francisco	3.2	7	Cleveland	2.7
8	St. Louis	3.4	8	Milwaukee	3.3	8	St. Louis	3.7	8	Providence	3.4	8	Boston	2.81
9	Covington, Ky.	4.2	9	Baltimore	3.4	9	Providence	3.8	9	Milwaukee	3.6	9	New Orleans	2.83
10	Boston	4.3	10	Covington, Ky.	4.5	10	Cincinnati	3.9	10	Buffalo	3.7	**10**	**Chicago**	3.14
11	Baltimore	5.7	11	San Francisco	4.1	11	Covington, Ky.	4.	11	Philadelphia	4.1	11	St. Louis	3.16
12	San Francisco	5.9	12	Providence	4.7	12	Philadelphia	4.03	**12**	**Chicago**	4.18	12	Philadelphia	3.2
13	Newark, N. J.	6.	13	Buffalo	5.	13	Baltimore	4.2	13	Cincinnati	4.3	13	San Francisco	3.5
14	Philadelphia	6.4	14	Cleveland	5.2	14	Dayton, O.	4.4	14	Baltimore	4.73	14	Buffalo	3.6
15	Cleveland	6.6	15	Cincinnati	6.2	15	Newark, N. J.	4.5	15	Cleveland	4.74	15	Covington, Ky.	4.2
16	Cincinnati	6.7	16	Philadelphia	6.4	16	Detroit	5.1	16	Newport, Ky.	5.8	16	Providence	4.7
17	Washington	8.32	17	Louisville	8.07	17	Jersey City	5.3	17	Jersey City	6.	17	Lawrence, Mass.	4.8
18	**Chicago**	8.33	18	Newark, N. J.	8.1	18	Cleveland	5.4	18	Lowell, Mass.	6.08	18	Baltimore	4.87
19	Louisville	8.8	19	Washington	8.3	19	Washington	7.	19	Detroit	6.09	19	Cincinnati	5.
20	Jersey City	9.1	20	Jersey City	9.5	20	Louisville	7.2	20	Dayton, O.	6.4	20	Lowell, Mass.	5.5
21	Lawrence, Mass.	12.3	21	Lowell, Mass.	9.8	21	Lowell, Mass.	9.	21	Washington	6.6	21	Pittsburg	5.6
22	Lowell, Mass.	15.8	22	Pittsburg	10.	22	Pittsburg	10.	22	Louisville	8.4	22	Newport, Ky.	6.2
			23	Lawrence, Mass.	11.5	23	Lawrence, Mass.	10.2	23	Lawrence, Mass.	9.3	23	Washington	7.1
			24	**Chicago**	15.97	**24**	**Chicago**	10.35	24	St. Louis	10.3	24	Louisville	7.2
									25	Pittsburg	11.1	25	Jersey City	7.06

SANITARY MAP OF CHICAGO: SHOWING TYPHOID-FEVER REDUCTION

Between 1891 and 1894.



Brooklyn	.26	.15	42.3
New-York	.21	.17	19.

Average reduction: 36.4 per cent. Reduction for Chicago: 80.3 pe

TYPHOID FEVER MORTALITY OF PRINCIPAL AMERICAN CITIES: 1890-1894; ARRANGED IN NUMERICAL ORDER OF LOWEST RATES FOR EACH YEAR.

Numer order
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

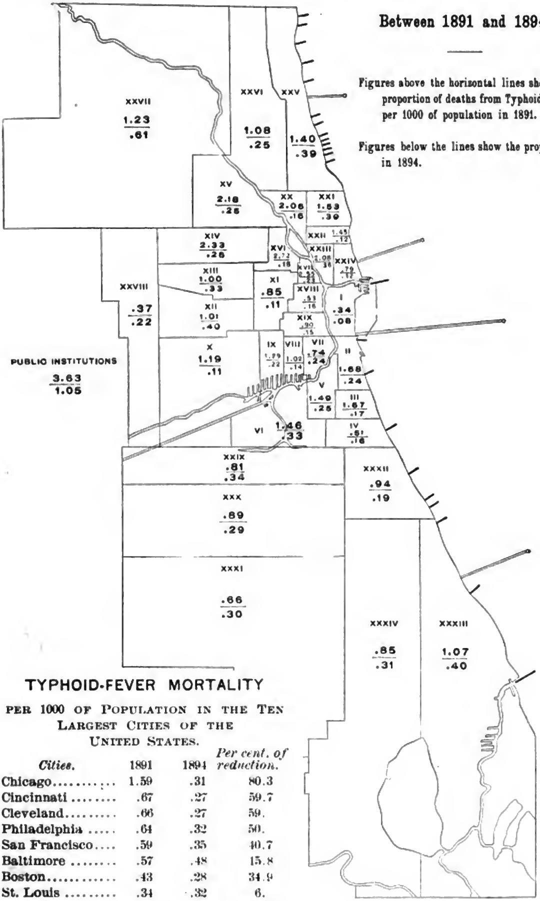
	Deaths per 10 000 of population
J.	1.5
	1.52
	1.7
	2.
	2.5
	2.6
	2.7
	2.81
as.	2.83
	3.14
	3.16
a	3.2
sco.	3.5
	3.6
Ky.	4.2
	4.7
Mass.	4.8
	4.87
	5.
ss.	5.5
	5.6
y.	6.2
	7.1
	7.2
	7.06

SANITARY MAP OF CHICAGO: SHOWING TYPHOID-FEVER REDUCTION

Between 1891 and 1894.

Figures above the horizontal lines show the proportion of deaths from Typhoid Fever per 1000 of population in 1891.

Figures below the lines show the proportion in 1894.



TYPHOID-FEVER MORTALITY

PER 1000 OF POPULATION IN THE TEN LARGEST CITIES OF THE UNITED STATES.

Cities.	1891	1894	*Per cent. of reduction.*
Chicago	1.59	.31	80.3
Cincinnati	.67	.27	59.7
Cleveland	.66	.27	59.
Philadelphia	.64	.32	50.
San Francisco	.59	.35	40.7
Baltimore	.57	.48	15.8
Boston	.43	.28	34.9
St. Louis	.34	.32	6.
Brooklyn	.26	.15	42.3
New-York	.21	.17	19.

Average reduction: 36.4 per cent. Reduction for Chicago: 80.3 per cent.

NEEDED SANITARY LEGISLATION.

BY ARTHUR R. REYNOLDS, M. D.
COMMISSIONER OF HEALTH OF THE CITY OF CHICAGO.

In Chicago, where is concentrated more than one-third of the population of the State of Illinois, many of the defects and inadequacies of existing health laws are more apparent than in smaller communities; evils that are scarcely felt in the rural districts, and only slightly in smaller municipalities, strongly impress themselves upon us.

Among these are the defects in our system of vital statistics. For many reasons the desirability of a correct registration of deaths and their causes and of births is obvious and, to some extent, has been recognized. Illinois has in its statutes certain provisions for the securing of reports of births and deaths; but in practice these are far from being satisfactorily obeyed.

In the city of Chicago and in other Illinois cities and towns of considerable size, deaths are more fully reported than they are in the State generally, and the same may, presumably, be said as to the registration of births. The completeness of the latter, however, is not so easily guaranteed, and evasions of the law are undoubtedly more numerous than in the case of deaths. The causes of this defect are recognized in the legislation of some States where the registration is more accurate and elaborate than with us and where it may be considered a measurable success; for example, in Connecticut—one of the few States of the Union whose statistics are quoted as of some value in this respect. There, no penalty is imposed upon the physician who fails to report a death, for the reason that no burial or disposal of a body can take place without the certificate of the attending physician or that of the official medical examiner. A penalty is, however, attached to the failure to report a birth within a certain specified time, while, on the other hand, a small fee is paid by the town for every such report. The town clerk is the registrar, and this insures a fairly correct return in the rural districts, since the territory is usually small, the population not dense and the concealment of a birth hardly a possibility.

Under our system of deputizing this duty to the county clerk, without even a nominal compensation to the reporting physician or midwife, there is no possibility of so immediate an oversight, and the chances for defects in the records are multiplied. There is no doubt that births go unreported to a very large extent in all parts of the State, and this is also true as to deaths, except in the cities and towns which enforce the burial-permit ordinance of the State Board of Health or its equivalent.

Such equivalent, as to Chicago, is found in the Municipal Code, Article X, Burial of the Dead; the same being an ordinance passed December 10, 1891, making it unlawful for any person or persons to remove any dead human body from within the corporate limits of the city of Chicago, or to bury any human body within the corporate limits of the city, or to cremate or to deposit any human body in any vault within the city limits, without first obtaining a permit so to do from the Commissioner of Health of the city, or from a subordinate officer appointed by the Commissioner in accordance with the provisions of the ordinance; the penalty for violation of these provisions being a fine of $100 for each offense. The ordinance is a re-inforcement of that passed January 6, 1890, and its practical effect has been to bring within the purview of the Health Department every death occurring within the city limits except a few cases of still-births, infants and deaths by criminal violence. The permit for burial or removal is in all cases based upon a certificate of the cause of death signed either by a legally-qualified physician or by the coroner; and whatever may be the defects of the vital statistics of the city in other respects, the registration of deaths and their causes is as nearly complete and accurate as possible.

DEFECTIVE REGISTRY OF BIRTHS.

The advantages and needs of accurate birth registration are daily demonstrated in the experience of the Health Department of Chicago; questions are constantly arising which can not always be answered for the lack of such registration. This is not a matter of merely scientific interest; it is a practical one, and it should be impressed upon our legislators that what we ask in this direction is not solely nor chiefly in the interests of State medicine or of sanitary administration. As a matter of fact, while these interests are of importance to us, the full and authentic record of births is of greater and growing importance to the public.

There is hardly a relation in life, from the cradle to the grave, in which such a record may not prove to be of the greatest value. For example, in the matter of descent; in the relations of guardians and wards; in the disabilities of minors; in the administration of estates; the settlement of insurance and pensions; the requirements of foreign countries in matters of residence, marriage and legacies; in marriage in our own country; in voting and in jury and militia service; in the right to admission and practice in the professions and many public offices; in the enforcement of laws relating to education and to child labor, as well as to various matters in the Criminal Code—the irresponsibility of children under 10 for crime or misdemeanor, the determination of the "age of consent," etc. As the country becomes more densely settled and the struggle for existence sharper, many of these matters, which have hitherto been of minor significance, will take on a deeper meaning and acquire greater importance.

To illustrate some of these points an instance or two under my own observation as Commissioner of Health may be cited: A German woman, who had recently lost her husband, applied at the office for a certificate of the birth of one of her children: her brother in Breslau, also recently deceased, had left her youngest child, named after the uncle, a remembrance in his will. A certificate of the child's birth was necessary. Records of births are not kept in the Health Department, but in the office of the County Clerk, to which the woman was directed. Fortunately, the birth had been recorded and a certificate of the record, duly attested by the German Consul, was prepared, forwarded to Breslau and in due time the poor woman received the amount of the legacy, $360—no doubt a godsend to her. In another case a Frenchman applied for similar evidence of a birth several years previously—exact date not known; the first search proved fruitless, and the man then endeavored to find the midwife who had attended, but she had removed to Kankakee soon after the birth, and had been dead two years. Another application and search unearthed a volume of records antedating the present Registrar's term and the record was found. Other cases have come to my knowledge in which the record of birth had been neglected and other evidence had to be procured; protracted delay was caused and some of these cases are not yet settled, because of inability to comply with the legal requirements as to proof of birth. The United States Pension Office is especially strict as to this proof in case of a pensioner's children—payments to whom cease at sixteen years of age, which makes the date of birth important.

It is true that in this country the "best attainable evidence" is accepted in the absence of the official record. But in foreign countries they are much more exacting than we are as to the "best attainable evidence," and to obtain such evidence, outside the official records, entails delay, labor and expense.

The best evidence, the most accessible and the most uniformly accepted, is that furnished by the registry of birth in the records of the officer legally authorized to make and keep such records. Dr. Neely, the Registrar of Vital Statistics for Cook County, tells me he furnishes an average of about one thousand certificates a year based upon his records, and these certificates are final and conclusive as to the facts. But a very large number of applications for these certificates can not be supplied because the birth was not recorded and other evidence must be hunted up.

Efforts to secure the registration of births in this State have thus far met with very little success. Thus, in the Report on Vital Statistics of Illinois for 1886—the latest on the subject published by the State Board of Health—the birth-rate for the whole State figures out, according to the tables, only 17 per 1000 and it was only 25 per 1000 for Cook County and 31 for Chicago.

I may be allowed to dwell a little in detail upon Cook County since I am more familiar with it than with any other county in the State, and also because its vital statistics strikingly illustrate the defective birth registration outside the larger cities.

In 1886 the population of Cook County—assuming it to have been the mean of the figures of the Federal census of 1880 and of that of 1890—was 899 700, and the births registered in the County Clerk's office numbered 22 779—a birthrate of 25 for every 1000 of the population. But 703 817 of the total population resided within the Chicago city limits, and of the total 22 779 all but 940, or 21 839, belonged to Chicago—making the birthrate of the city for 1886, 31 for every 1000, while that of the rest of the county was less than half of one birth for every 1000 of population.

Although this birth-rate for the city was undoubtedly too low, it apparently fell off still more in the census year 1890. For that year the population of the county was 1 191 922 (United States Census), and the number of births registered was 24 217, giving a birth-rate of a fraction less than 13 per 1000. The population of the city was 1 008 576 and the registered births 23 219—a rate of 23 per 1000, as against 31 per 1000 in 1886. In the rest of the county, with a population of 183 346, the number of births registered was 998—a gain of nearly 30 per cent over 1886, as compared with the population, but still giving the absurd birth-rate of less than one in 1000.

It should be explained that the apparent loss of population in the rest of the county outside of Chicago—195 900 in 1886, and only 183 346 four years later, is due to the fact that considerable territory was annexed to Chicago during the period. The population was not lost; it was only transferred to Chicago. This transfer unquestionably had much to do with the apparent reduction of the Chicago birth-rate, since it is not likely that the mere change of boundary lines effected any change in the customs of the doctors and midwives or of the people; if they failed to report births before, they would be apt to continue to do so after annexation, at least for a time. As the area thus annexed embraced nearly 140 square miles, with a population in 1890 of more than 250 000 of those who, in 1886, returned births at a rate of less than one-half of 1 per 1000, this fact is quite sufficient to account for the apparent falling off in the Chicago rate in 1890.

In Dr. Neely's opinion about 40 per cent. of the births in the whole county—Chicago included—are not reported. On this estimate of deficiency the birthrate would be about 34 per 1000 for the county in 1890. But this is assuredly too low. Dr. John S. Billings fixes the true birth-rate of the whole country at 36 per 1000, and there is no reason to believe that the mothers of the great State of Illinois fall below the general average of mothers in other States.

Dr. Neely is probably more nearly correct when he estimates the deficiency in the county outside of Chicago at 75 per cent, which would make the Chicago deficiency that much proportionately less. If we deduct this excess of deficiency from the Chicago returns, it would enable us to fix the true birth-rate of the city at 38.7 per 1000. When we take into consideration the fact that the average birth-rate of a number of representative foreign cities, including those of Great Britain, Germany, Russia and other continental countries, is a little more than 39 per 1000; that the birth-rate of Moscow is 41.5, of Berlin 42.6, of Alexandria in Egypt 45, and of Montreal 47.6 per 1000; and that Dr. Tracy, Registrar of Vital Statistics for New York City, basing his estimate on the marriage ratio, fixes the birth-rate of that city at nearly

38 per 1000, it will be seen that Dr. Neely's long experience and observation have enabled him to approximate very closely to the standard of deficiency in the returns.

The composite of the foreign cities referred to may be taken as fairly representative of the cosmopolitan character of the population of Chicago, and there is no obvious reason why the Chicago birth-rate should not be at least as high as their average, when we take into account the virile character of its population, the large proportion of the nubile age period and the conditions of living—comfort, food, habitations, clothing, etc.

Let me return for a moment to the contrast between the birth returns of a large city and those of the rural districts as illustrated in Chicago and Cook County. The rates per thousand have already shown this in the mass, but Dr. Neely tells me there are localities in the county, outside of the city, in which, according to his records. there can be no children living under 8 years of age, unless they have been brought in after birth; even in the town of Evanston, with 12,000 population, there has been no baby born to his official knowledge within the past three years—if we exclude the volunteer statement of a woman who recently visited the Registrar's office to secure the record of the births of her four children in that seat of learning and abode of the virtues.

What is true of Cook County is true, also, of the other counties of the State—differing only in degree. Thus, referring again to the 1886 tables of the State Board of Health, we find that Jersey, Pulaski, Putnam, Stark and Wayne Counties reported 60 births or less in each county, which would indicate about 4 births to every 1000 of population. In Wayne County, according to this report, they have only two babies and a little piece of one every year among every thousand people living in that otherwise fertile and prolific region.

On the other hand, in some counties, such as Adams, Kane, LaSalle, McLean, Madison, Peoria, St. Clair, Sangamon and Will, which contain large towns and are pretty well settled, a much better proportion is reported. This group had, in the year of the report, 1886, an aggregate of 546 000 population and returned 7629 births, giving a rate of 14 per 1000. In St. Clair County the rate was 19; in McLean, 18; in LaSalle, 16; in Kane, 16; in Adams, 14; and in Peoria 13 per 1000. Only in Madison. where the rate was 11, in Sangamon with a rate of 10, and in Will with a rate of only 7 per 1000, did the returns from this group fall below those of Cook in 1890, when it was less than 13.

If we were to take these figures as representing the actual facts we should have to look forward to the speedy extinction of our rural population, the stock to which we look to make up for the degenerative influences of urban life and tendencies. The natural and inevitable interpretation of these figures is that applied to the boy's historic conundrum,—"the little boy lied."

What is the use of depending for accurate statistics of births on a penalty applied only to the physician for non-reporting them, when in some sections half, and in all regions an appreciable proportion of them, never come under his professional observation? The only way to make the penalty effective would be to apply it to the parents and to the householder where the birth occurs, and to make it still more effective in the rural districts the first and direct registration should be one of the duties of the town clerk or supervisor, he to report to the county clerk, or directly to the State Board of Health, thus securing a narrowed responsibility and a more practicable supervision as well as facilitating the detection and location of errors. Some such provisions as these have often been advocated by the State Board of Health but have not yet become laws.

In the registration of deaths the results are much more satisfactory. In one of the recent reports of the State Board of Health it is estimated that 80 per cent. of all physicians in the State now report deaths and their causes, which would imply that at least 80 per cent. of the total deaths in the State are recorded. In towns and cities where the burial-permit ordinance is in force, substantially all deaths are accounted for, and the only suggestions of amendment in the registration of deaths and their causes which I have to offer are: First, the enactment of a law extending the provisions of this ordinance to all cemeteries and burial places throughout the State; Second, that such law should require that the certificate of the cause of death, on which the permit is based, should be examined by a medical man competent to judge of the sufficiency of the cause specified: and, Third, the adoption of a uniform classification and nomenclature of the causes of death.

With these amendments the medical profession, health officers and the public at large would, in a short time, be able to determine whether a given death rate in a community was excessive or not, and what disease or diseases caused such excess. With this knowledge the health officer could intelligently investigate the causes, and if found to be due to insanitary conditions it would be more easy to enlist the interest and co-operation of the public to secure their correction. It is not enough to preach sanitation in the abstract—to talk about the importance of good drainage, pure water, ventilation and the rest of it. To get the public to understand these matters we must be able to give them object lessons, to furnish facts and figures in the same way we would do in any other business in which we desire their attention and interest. When we can put our fingers on an excess of deaths from consumption, or typhoid fever, or diphtheria, or among infants and children in a given locality, as compared with other places, and show that the excess is caused by defective drainage, or polluted water, or imperfect or improper disposal of filth, or a bad milk supply, we will have gone far toward securing a correction of the defects and evils, and thus reducing the death rate—which means protecting both the health and the pockets of the people.

NOTIFICATION OF CONTAGIOUS DISEASES.

It is, of course, a truism to say that the health officer should be promptly informed of the occurrence of any disease that is liable to spread by contagion, or whose extension may be prevented by sanitary measures. Without such information, cases of contagious disease may exist uncontrolled until they have sown the seeds of an epidemic, when, if the earliest cases were brought to the attention of the health officer the outbreak might be limited to them or to those already exposed. Where such notification is made, there is overwhelming evidence of the sufficiency of recognized measures of restriction and suppression, in averting epidemics and in confining cases of contagious disease to those first attacked or to the premises first infected. That the suppression of such information vastly increases the difficulties of the health officer is well known to all of us, but most seriously to those who are called on to administer the sanitary affairs of large communities, where it is a physical impossibility to have personal and direct cognizance of every one who is sick and the character of the sickness. And yet the health officer—whose first information of the existence of a contagious disease is, only too frequently, the receipt of a certificate of death from such disease—is held responsible by the press and the public for every epidemic outbreak.

I do not mean to say that this is not to some extent justifiable. I suppose that is what the health officer is for—to prevent epidemics and to reduce the volume of preventable sickness and the number of premature deaths. But he should not be asked to make bricks without straw nor to perform the impossible—for that is what it amounts to when he is expected to prevent an epidemic while the baser elements of the community conspire to suppress the knowledge of cases until these have multiplied so much that their concealment is no longer possible and then the outbreak is beyond speedy control.

There is nothing in the statutes, as I understand them, requiring physicians to give notice of cases of contagious disease in their practice. It is true that, under the authority conferred on the State Board of Health in the second section of the Act of 1877—"to make such rules and regulations . . . . as they may from time to time deem necessary for the preservation or improvement of public health"—the Board has promulgated its School Vaccination Orders and its Rules and Regulations for the Prevention and Suppression of the Epidemic and Malignant Diseases, which rules and regulations require physicians to give such notice and which, we are told by the Board, "have the weight and authority of law." That is to say, they have the weight and authority of the law on which they are based, but no more; and as there is no penalty provided in that law for its neglect or violation, the notification of cases and the enforcement of the rules and regulations depend on the sense of duty and the personal influence of the health officer—his tact, energy, courage and ability to persuade the people of his community to help him to protect them from contagion and infection or at least to allow him to do so.

In some cities and towns there are ordinances requiring attending physicians to report to the health authorities all cases of these diseases occurring in their practice, and penalties are provided for neglect to report. But neither are such ordinances effective in securing the necessary notification. In a recent report I have touched upon this subject in the following passage:

> Section 2029, of the Municipal Code of Chicago, directs that "every physician shall report to the Commissioner of Health, in writing, every person having a contagious or infectious disease that he has prescribed for or attended, for the first time since having such disease, during any part of the preceding twenty-four hours." The object of this requirement is, obviously, to secure prompt notification of the existence of contagious or infectious diseases, to the end that the Department may take the necessary action to prevent any spread of contagion or infection, and to remedy any conditions upon which such diseases may depend.
>
> But it is a requirement directly in the interest of the public, and not at all, or only remotely, in the interest of the physician, who is called upon to fill out a blank with date, disease, location of case by number, street and ward, name of patient, age, nativity, color, sex, date of attack, length of time in the city, his own name and address, and a statement as to whether the patient attends a school or kindergarten. He is not only required to do this without compensation for the time spent in ascertaining facts of personal and social history, etc., that have no bearing on his treatment of the case—with which alone he is concerned—but he frequently incurs the hostility of the family and friends, who object to the publicity which follows the report, and thereby suffers in his practice.
>
> That there should be some opposition to the requirement is only natural, and it can not be said to be unreasonable; the Commissioner has therefore modified the previous practice of the Department, which has been to prosecute physicians failing to comply. But in order to secure without friction the information so necessary to the usefulness of the Department and to the public welfare, a direct appeal to the profession was made with fairly satisfactory results.

Before occupying my present position I was engaged in active practice, and know from experience both sides of this question and appreciate its difficulties. It is argued that the physician—"in the interest of the public welfare"—should perform this labor without compensation and incur the risks of odium which attaches to the informer in any shape, because " he holds a license to practice medicine from the State, which, in a measure, protects him from unlawful competition." The lawyer holds a similar license and is similarly protected from unlawful competition. But what would be said of the proposition to enact a law or ordinance requiring that every lawyer—" in the interest of the public welfare"—shall report to the Superintendent of Police, in writing, every criminal that he has advised in his professional capacity within twenty-four hours after having given such advice, under penalty of a fine for each and every failure to so report? The one proposition is as reasonable and defensible as the other. The ordinance should either be amended so that the physician might receive proper compensation for his time and labor in making these reports, or it should be repealed, so that the profession might be relieved of the constructive charge that many of its members are chronic violators and defiers of the law.

I see no good reason why the householder in whose family or upon whose premises a case of the dangerous contagious diseases occurs should not be required to make this report. The notification is directly in his interest and in that of his neighbors, and it seems only common justice that the responsibility should be placed where the benefit accrues.

NEEDED LEGISLATION FOR COUNTY CHARITIES.

Upon the legislation necessary for a decent, humane and economical administration of our county charities I shall dwell only briefly.

From the various biennial reports of our State Board of Charities, and from the annuals of the State Board of Health, there could be compiled a saddening record of mismanagement, of wasteful and fraudulent expenditure, of cruelties, abuses and scandals in the county treatment of paupers and those most pitiable of God's creatures—the indigent insane. I speak now more particularly of Cook County, whereof I know personally; but, according to these reports, similar conditions exist, only in lesser degree, in many other parts of the State. Cook County maintains a hospital for the insane, second in point of magnitude to but one of the State institutions for similar purposes and ranking, in that respect, with the larger asylums of the whole country. If these reports be true, the history of the institution, from its inception, has been that of a series of scandals covering every manner of corrupt jobs and jobberies in construction, repairs and maintenance; in the purchase of supplies of every description; of medical and surgical incompetence; of brutality of nurses and attendants and immoralities of employes.

The cause is not far to seek. As has been repeatedly pointed out by investigating committees, by State officers, and by the medical profession, it is the system which is at fault. It is a system which has set at naught the best efforts of the few competent and self-sacrificing individuals who have, from time to time, been connected with the institution and who have sought in vain to correct its abuses and to carry out reforms. The county poor-house, the insane asylum and the county hospital are all under the immediate control of the Board of County Commissioners. If the Commissioners were of the best material in the community—as they sometimes are—the term of office is too short—it is now but two years and recently was only one year—to enable a board, so frequently changed, to effect any reform or establish the principles upon which the administratinn of the county institutions should be conducted.

The remedy for these abuses would seem to lie in legislation vesting the supervision and control of such charities in a Board of Trustees, appointed by the Courts, or by the Governor on the recommendation of the Courts, or in any other manner which should secure a representative non-political body of citizens, recognized as interested and versed in charitable and penological administration—the functions of the County Commissioners to be limited to the fiscal affairs of the institutions, the making of appropriations, the auditing of accounts, fixing of salaries, etc., in the same manner as they are now related to the Coroner's and other county offices. It is needless to say that the composition of this Board should be continuous and permanent, the term of appointment long and the yearly changes limited in number so as to profit by the accumulating experience of members.

While I have treated specifically of the needs of Cook County, such legislation would be applicable to the whole State, and in this connection the Wisconsin system of county provision for the insane may be profitably considered. In that State insane asylums of a certain capacity may be established by any county or by two or more counties acting jointly, and receive a certain proportion of their support from the State. They are under the supervision of a Board of Trustees appointed in part by the County Board and in part by the Governor; there is a Medical Superintendent in charge, and the institution is subject to direct State oversight, either through the State Board of Charities or the Lunacy Commission. Under a similar provision in this State such asylums might be established by the larger counties, or those containing the larger centers of population to which the waifs and public charges naturally gravitate and which now are, in fact, bearing the burdens shirked by smaller communities. They would not be so expensive to maintain as the present institutions, while in every other respect they would certainly be far more desirable.

THE CORONER SYSTEM.

As to my final topic: The duties of a coroner as an inquisitor into cause of death, where death is the result of violence or where there is reason to suspect that death is due to other than natural causes, demand the qualifications of an expert anatomist, pathologist and toxicologist, while his other functions require an expert knowledge of law—a combination which may be found in one and the same person about as often as one meets with a white blackbird.

It is not necessary to dwell on the defects and abuses of our present system, under which the incumbent is frequently neither physician nor lawyer, too often only a cheap politician readily approachable by employers and corporations—railroad, mining and other—seeking to evade responsibility for deaths due to their negligence. It is a fortunate chance and not a necessary result of the system when the office is as acceptably filled, both as to Coroner and Coroner's Physician, as it is at present in Cook County, and, I have no doubt, in other counties of the State. But even where the integrity of the elective coroner and his general intelligence are admitted, he is handicapped in many ways under the present system. The average coroner's jury is proverbially ignorant—a facile tool for any unscrupulous limb-o'-the-law; and its verdict has without doubt allowed many a criminal to go unwhipt of justice, or defrauded the widow and orphan of righteous compensation for the death of the breadwinner. Then, too, cases often occur where prolonged and costly criminal trials, ending not unfrequently in a miscarriage of justice, could have been avoided had the inquest been conducted and the necropsy performed with the necessary skill and intelligence.

To sum up in a single sentence: The present coroner system in this State does not adequately defend the interests of the poorer classes in particular as against the neglect of employers and corporations, nor properly protect the public in general as against crime.

It would be well if a suitable bill could be presented to the Legislature, framed substantially on the lines of the Massachusetts Medical Examiner law of 1877 and its subsequent amendments. It is possible that some defects have been disclosed in the practical operation of the Massachusetts law and that there are improvements in the analogous legislation of Connecticut and New Jersey, as well as in the proposed New York bill. But Dr. Samuel W. Abbott, the able Secretary of the Massachusetts State Board of Health, writing in 1893, says, "the system has now been in successful operation nearly sixteen years, and it is safe to say that no return to the coroner system will ever be made in Massachusetts. . . . . . It is a sufficient comment upon this law that more than 18 000 cases of sudden, suspicious and violent deaths have been investigated under its authority in a far more satisfactory, intelligent and economical manner than could have been possible under the old regime."

One fact alone should have great weight with our legislators, as it undoubtedly will with the tax-paying public, to-wit, that a careful comparison of the cost of the coroner system in Massachusetts during the three years prior to the Act of 1877, with the cost of the Medical Examiner system during the next three years showed a decided reduction in expenses, and recent statistics show a lessening cost of about 2 per cent. per annum for each case under the new system.

The tax-payer at least will appreciate this.

And after all, it is, as I have previously intimated, the tax-payer and the general public who will settle the question of what and how much legislation we shall have. If we can show them that what we ask is really in their interest and for their benefit, and will base our arguments on sound business principles, set forth in plain English, I doubt not that their representatives in the General Assembly will be prompt to embody their wishes in practical, common sense and effective legislation for the further protection of the lives and health of the citizens of a State which is destined to be, in the near future, the foremost in the Union.

NOTE.—The foregoing is the substance of an address prepared at the request of the State Board of Health for a convention of its Auxiliary Sanitary Association, held November 13, 1894.

Vital Statistics

OF THE

CITY OF CHICAGO

1894

Vital Statistics of Chicago,

FOR THE YEAR ENDED DECEMBER 31, 1894.

Population of Chicago, Official Census, April, 1894 .... 1 567 727
Total Deaths from All Causes 23 892
Annual Death Rate .... 15.24 per 1000 of Population.

POPULATION BY AGES AND SEXES.

AGES.	Males.	Females.	Total.
Under 1 year	25 427	26 307	51 734
Between 1-2 years	23 186	23 845	47 031
2-3	21 816	22 080	43 896
3-4	21 121	21 207	42 328
4-5	18 850	18 775	37 625
5-10	100 048	99 053	199 101
10-20	174 965	171 502	346 467
20-30	142 837	137 786	280 623
30-40	100 530	95 435	195 965
40-50	73 087	68 008	141 095
50-60	49 100	44 963	94 063
60-70	31 037	28 536	59 573
70-80	10 237	10 143	20 380
Over 80 years	3 915	3 931	7 846
Total all ages	796 156	771 571	1 567 727

BY GROUPED AGES AND SEXES.

GROUPS.	Males.	Females.	Total.
Under 4 years	80 668	80 789	161 437
5	110 400	112 214	222 614
6	128 419	127 161	255 580
14	243 602	240 232	483 834
21	331 196	327 450	658 646
Over 21	472 151	436 930	909 081

BIRTHS.

[Returns of births in the City of Chicago are not required to be made to the Department of Health, but to the County Clerk of Cook County, who reports them to the State Board of Health. From data furnished through the courtesy of the Secretary of the Board, Dr. J. W. Scott, the following figures have been compiled.]

NUMBER OF BIRTHS IN 1894.

Males.	Females.	Sex not stated.	Total.	Rate per 1000 of population.
27 177	28 267	5 216	60 660	38.7

I. DEATHS AND REPORTED CAUSES OF DEATHS: 1894.

CAUSES OF DEATH.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Total Deaths from All Causes	1808	1501	1821	2134	2135	2033	2780	2252	2098	1916	1633	1781	23892
Disease	1706	1418	1727	1995	2005	1897	2605	2086	1951	1769	1516	1676	22351
Violence	102	83	94	139	130	136	175	166	147	147	117	105	1541
GENERAL DISEASES:													
Febrile or Zymotic—													
Cerebro-spinal fever	16	19	23	20	18	34	35	15	24	15	14	16	249
Chicken-pox	....	....	....	....	....	....	....	....	....	....	1	....	1
Diphtheria	74	45	49	35	45	45	41	55	76	104	140	132	*a*] 841
Influenza	20	7	4	6	6	1	1	....	....	1	3	2	51
Malarial fevers	5	1	2	4	3	2	1	1	5	4	4	2	34
Measles	10	9	26	23	20	20	20	17	8	7	4	18	182
Mumps	....	....	....	....	....	....	1	....	....	1	....	1	3
Scarlet fever	30	23	16	18	13	16	17	19	5	8	10	15	190
Smallpox	29	55	100	157	253	171	51	53	31	40	51	42	1033
Typhoid fever	46	26	27	30	31	31	37	52	71	68	39	34	492
Whooping cough	16	10	11	14	23	15	24	35	38	8	11	5	210
Total	246	195	258	307	412	335	228	247	258	256	277	267	3286
Diarrheal—													
Cholera infantum	....	....	....	....	....	127	1041	662	502	....	....	....	2332
morbus	1	1	....	2	1	5	22	12	8	....	1	....	53
Diarrhea	6	1	5	8	5	13	....	....	....	....	....	2	40
infantile	5	4	12	10	21	....	....	....	....	255	76	64	447
Dysentery	3	3	3	4	5	4	27	5	6	3	1	....	64
Total	15	9	20	24	32	149	1090	679	516	258	78	66	2936
Zoogenous—													
Hydrophobia	....	....	....	....	1	2	....	1	....	1	....	....	5
Vaccination	....	....	....	....	....	....	1	....	....	....	....	....	1
Total	....	....	....	....	1	2	1	1	....	1	....	....	6
Venereal—													
Syphilis, acquired	....	....	....	....	1	1	....	2	2	1	3	1	11
congenital	2	5	2	10	...	1	4	3	3	2	4	5	41
Total	2	5	2	10	1	2	4	5	5	3	7	6	52
Septic—													
Erysipelas	7	10	3	9	10	5	5	2	6	2	4	9	72
Puerperal septicemia	8	10	8	5	5	6	25	9	11	8	12	17	124
Pyemia	2	2	7	10	1	4	4	....	1	....	1	3	35
Septicemia	15	6	15	20	12	6	12	8	6	7	5	11	123
Total	32	28	33	44	28	21	46	19	24	17	22	40	354
Parasitic Diseases—													
Thrush	3	2	....	1	1	2	3	2	2	2	5	....	23
Total	3	2	....	1	1	2	3	2	2	2	5	....	23
Dietetic Diseases—													
Alcoholism	10	3	3	9	2	5	8	8	11	8	10	7	84
Ptomaine poisoning	....	....	....	....	....	....	....	....	....	1	....	....	1
Scurvy	....	....	....	....	1	....	2	....	....	....	....	....	3
Total	10	3	3	9	3	5	10	8	11	9	10	7	88

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a] There should be added to this total of *Diphtheria* probably 80 per cent of the deaths reported to the Registrar as "*Croup*" and returned in these statistics under the head of *Diseases of the Respiratory System*. This would make the mortality from *Diphtheria* 1,293 deaths for 1894.

DEATHS AND REPORTED CAUSES OF DEATHS—*Continued.*

CAUSES OF DEATH.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Constitutional Diseases—													
Anemia	4	2	4	3	3	3	....	1	2	2	2	2	28
Cancer of breast	6	2	4	4	2	....	4	6	3	2	5	5	43
face	1	....	....	2	1	2	1	3	5	....	4	1	20
liver	5	8	3	2	5	4	2	3	6	5	4	9	56
rectum	....	1	2	1	1	3	3	1	....	4	....	....	16
other intestines	1	2	....	5	5	3	4	6	2	3	1	1	33
stomach	15	9	11	19	22	11	14	18	18	13	7	23	177
throat and neck	4	3	....	2	7	3	5	4	2	5	5	2	42
womb	6	5	10	11	5	14	9	12	10	12	9	8	111
other parts	9	5	8	8	9	10	17	8	17	15	17	19	142
Diabetes	5	7	3	4	8	2	5	3	7	7	5	4	60
Hemorrhagic diathesis	3	1	....	....	....	1	1	1	....	....	....	1	8
Leucocythemia	2	1	2	....	....	1	....	1	2	3	3	....	15
Purpura	2	....	3	1	2	....	....	1	1	....	....	....	10
Rheumatism	10	10	11	13	17	8	2	6	3	5	6	9	100
Rickets	....	....	....	2	....	....	2	3	1	1	1	2	12
Tuberculosis, articular	....	2	3	1	2	4	....	1	....	2	....	....	15
cerebral	10	14	22	12	14	21	23	22	24	13	8	16	199
hemoptysic	9	4	2	2	5	3	4	1	....	...	5	1	36
intestinal	3	4	3	4	1	3	2	9	4	6	1	....	40
mesenteric	1	....	....	....	....	3	2	3	5	1	1	6	22
pulmonary	177	152	176	200	229	187	178	185	183	165	152	171	2155
other forms	4	2	4	....	2	2	1	1	1	3	4	8	32
Total	277	234	271	296	340	288	276	299	296	267	240	288	3372
Developmental—													
Atelectasis	1	3	4	10	5	3	3	4	3	3	2	2	43
Icterus neonatorum	2	2	1	2	....	1	1	3	6	5	3	3	32
Marasmus, infantile	68	53	62	76	68	81	76	95	107	83	60	72	901
Old age	40	27	27	41	41	41	35	30	25	39	23	37	409
Spina bifida	1	1	1	4	2	....	3	4	....	2	1	1	20
Trismus nascentium	3	6	4	1	2	1	3	2	3	7	2	....	34
Other congenital defects and accidents	16	19	22	14	22	18	48	9	8	9	7	13	205
Total	131	111	121	148	140	148	172	147	152	118	98	128	1644
LOCAL DISEASES:													
Nervous System—													
Apoplexy	40	38	35	37	45	30	33	43	39	42	32	38	452
Brain, abscess of	....	1	1	3	1	1	1	1	1	2	3	5	20
congestion of	13	7	10	10	7	9	15	3	....	1	....	....	75
softening of	4	4	....	....	5	4	....	2	....	....	4	....	23
tumor of	4	....	....	5	....	2	....	....	1	2	1	....	15
other diseases of	1	1	1	2	3	....	3	3	1	....	....	2	17
Brain and membranes, inflammation of	55	51	61	50	51	57	82	53	60	50	39	33	612
Chorea	1	....	....	....	1	....	1	1	3	1	....	....	8
Convulsions	87	99	118	132	111	122	111	78	88	82	80	81	1189
Dementia	....	....	2	3	2	2	2	1	2	1	2	1	18
Epilepsy	1	3	2	5	1	1	6	4	9	4	4	2	42
Laryngismus stridulus	6	3	1	2	2	....	....	....	....	....	3	....	17
Locomotor ataxia	....	2	2	2	1	1	1	....	5	1	2	2	19
Mania	....	1	1	....	....	2	1	1	....	....	....	....	6
Neurasthenia	4	3	3	3	2	1	....	....	6	1	....	1	24
Paralysis	10	16	25	15	15	14	19	11	16	17	16	20	197
Spinal cord and membranes, diseases of	15	12	29	9	16	11	10	8	9	7	5	9	140
Sunstroke	....	....	....	....	1	7	2	2	....	....	....	....	12
Tetanus	1	1	....	2	7	9	8	4	2	5	4	....	43
Total	242	212	294	280	271	273	295	218	242	216	195	194	2959

DEATHS AND REPORTED CAUSES OF DEATHS—*Continued.*

CAUSES OF DEATH.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Circulatory System—													
Angina pectoris	9	....	5	12	1	2	3	5	6	1	4	....	48
Aneurism	2	3	2	4	....	1	....	6	....	2	10	3	33
Arteries, other diseases of	1	....	....	....	....	....	1	....	....	....	....	....	2
Endocarditis	15	5	8	9	14	4	5	7	5	2	3	1	78
Heart disease, unspecified	26	23	28	34	28	34	5	29	28	36	29	21	321
fatty	6	1	4	6	11	2	7	5	5	6	3	3	59
hypertrophy of	5	6	10	2	2	7	2	1	1	3	3	5	47
paralysis of	4	2	3	2	3	5	....	....	1	....	1	....	21
valve-disease of	40	25	24	37	29	25	63	21	29	46	33	40	412
Myocarditis	....	....	2	1	1	1	1	....	....	....	....	2	8
Occlusion of artery	2	3	4	8	2	9	2	3	3	2	6	7	51
Pericarditis	6	6	6	6	4	....	2	1	2	1	2	8	44
Phlebitis	....	2	1	1	....	3	....	2	....	....	....	1	10
Total	116	76	97	122	95	93	91	80	80	99	94	91	1134
Respiratory System—													
Asthma	5	2	4	8	8	2	1	4	4	8	7	3	56
Bronchitis	89	74	87	171	154	109	46	52	62	92	82	167	1185
Croup [a	39	31	38	29	22	28	26	33	41	81	92	105	565
Emphysema	3	....	1	2	....	1	1	....	....	1	....	3	12
Empyema	7	7	5	3	3	2	1	3	4	....	1	1	37
Laryngitis	3	1	4	....	3	2	....	....	....	2	....	....	15
Pleurisy	4	2	4	1	5	2	....	3	....	2	2	4	29
Pneumonia	171	118	147	230	187	141	72	68	64	86	129	108	1521
Pulmonary congestion	14	16	9	17	16	6	4	3	4	1	4	6	100
Other dis. of respiratory syst	....	1	....	2	....	3	1	....	1	1	1	3	13
Total	335	252	299	463	398	296	152	166	180	274	318	400	3533
Digestive System—													
Appendicitis	11	4	9	9	6	8	6	7	7	7	5	8	87
Gallstones	....	....	....	....	....	....	3	....	....	....	....	6	9
Gastric ulcer	1	1	4	5	....	2	3	3	6	2	4	4	35
Gastritis	19	20	17	27	15	23	26	12	5	9	12	12	197
Gastro-enteritis	26	30	46	33	36	29	6	9	....	8	7	7	237
Hernia	2	5	1	1	5	5	....	3	6	3	1	2	34
Intestines, inflammation of	34	23	59	54	59	42	10	24	15	17	12	4	353
intussusception of	1	....	5	....	1	6	1	1	1	1	....	1	18
ulceration of	....	1	4	3	2	3	2	....	....	4	....	....	19
other diseases of	4	5	8	13	12	8	2	5	16	14	6	5	98
Liver, abscess of	....	1	1	....	....	1	1	1	....	....	2	3	10
cirrhosis of	15	10	13	5	4	8	19	22	9	13	7	10	135
other diseases of	....	2	2	2	2	2	9	4	1	....	....	1	25
Peritonitis	40	33	33	34	35	42	37	28	27	27	18	15	369
Tonsilitis	....	4	....	1	1	2	2	2	1	2	2	1	18
Other diseases, digestive system	2	....	....	....	....	....	3	3	....	....	1	1	10
Total	155	139	202	187	178	181	130	124	94	107	77	80	1654
Absorbent and Glandular System—													
Addison's disease	....	....	....	2	....	....	....	....	....	....	....	....	2
Bronchocele	....	....	....	....	....	....	....	....	....	....	....	3	3
Total	...	....	....	2	...	....	....	....	....	....	....	3	5
Urinary System—													
Calculus	....	....	1	....	....	....	....	....	....	2	....	2	5
Cystitis	4	4	4	....	4	3	5	2	3	3	1	5	38
Nephritis, acute	39	50	37	31	31	16	16	14	17	23	29	23	326
chronic	14	22	22	6	21	37	52	35	30	44	32	29	344
Uremia	12	5	5	14	11	8	2	1	....	....	....	....	58
Other diseases, urinary organs	10	7	20	22	10	12	8	4	11	11	6	9	130
Total	79	88	89	73	77	76	83	56	61	83	68	68	901

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a] Probably 80 per cent of these deaths were due to *Membranous* or *Diphtheritic croup*, and should have been so reported to the Registrar. This would leave the total deaths from *Catarrhal croup*—a local and not very fatal disease—113 for the year.

DEATHS AND REPORTED CAUSES OF DEATHS—*Concluded.*

CAUSES OF DEATH.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Reproductive System—													
Abortion, miscarriage	3	2	4	3	3	3	1	....	....	1	1	....	21
Childbirth	....	1	2	3	1	1	2	1	4	1	....	....	16
Diseases of uterus	4	....	2	5	2	2	2	3	....	2	1	4	27
ovaries and other appendages	7	3	6	3	2	....	3	2	5	8	5	6	50
Pelvic abscess	1	....	3	....	2	....	....	....	1	....	....	3	10
peritonitis	....	1	....	1	3	1	....	4	....	....	....	....	10
Puerperal eclampsia	1	6	5	3	3	2	6	7	8	3	4	6	54
hemorrhage	....	3	2	2	3	....	4	2	2	2	2	3	25
peritonitis	23	4	11	7	7	6	....	....	....	....	....	....	58
Other puerperal affections	4	2	....	1	....	1	....	2	1	....	1	2	14
Total	43	22	35	28	26	16	18	21	21	17	14	24	285
Osseous and Integumentary Systems—													
Abscess	6	1	....	1	1	3	....	....	3	2	2	8	27
Carbuncle	2	....	2	....	....	....	....	2	1	....	....	1	8
Disease of bones	7	8	1	2	1	4	....	4	....	3	3	2	35
Pemphigus	2	....	....	....	....	....	3	2	1	2	1	1	12
Ulcer	....	....	....	....	....	....	....	....	2	1	1	....	4
Other diseases, osseous and integumentary systems	3	3	3	....	....	3	3	5	1	5	5	2	33
Total	20	12	6	3	2	10	6	13	8	13	12	14	119
DEATHS FROM VIOLENCE.													
Misadventure or Negligence—													
Asphyxiated	4	4	10	5	5	1	6	2	4	2	5	5	53
Burns and scalds	6	9	4	4	4	4	12	5	14	15	9	5	91
Drowning	3	4	10	8	25	20	42	28	17	9	4	1	171
Explosions	....	....	....	....	....	....	7	1	....	....	1	....	9
Exposure	....	3	....	....	1	....	....	....	....	....	....	....	4
Falls	10	5	2	13	12	12	11	17	12	12	14	6	126
Firearms	2	....	2	4	6	2	19	8	3	4	14	14	78
Killed by electricity or machinery	....	1	....	4	....	2	....	1	1	1	1	....	11
elevators	1	1	1	1	....	....	2	1	1	1	....	....	9
railroads	19	16	13	26	25	17	20	29	25	29	21	16	256
street cars	1	2	5	1	4	5	5	4	3	6	3	6	45
Poisons	4	2	4	6	3	3	5	7	8	2	1	7	52
Run over	5	....	3	5	3	7	....	8	3	2	4	....	40
Other accidents	16	14	16	31	13	23	18	20	21	29	16	19	236
Total	71	61	70	108	101	96	147	131	112	112	93	79	1181
Homicide—													
Manslaughter	6	3	5	6	4	17	7	3	6	4	....	....	61
Total	6	3	5	6	4	17	7	3	6	4	....	....	61
Suicide—													
By cutting instrument	....	2	2	3	3	2	1	3	....	....	1	1	18
drowning	3	....	....	....	2	2	1	1	2	1	....	2	14
firearms	9	9	4	11	4	7	9	9	11	12	7	15	107
hanging	3	2	7	5	6	2	....	3	....	2	3	....	33
poison	8	5	5	6	10	9	10	13	15	12	12	8	113
other modes	2	....	....	....	....	....	....	1	1	4	1	....	9
Total	25	18	18	25	25	22	21	30	29	31	24	26	294
Legal execution	....	....	1	....	....	....	....	....	....	....	....	....	1
Unknown cause	....	1	....	....	....	1	....	2	....	....	....	....	4
Total	....	1	1	....	....	1	....	2	....	....	....	....	5

II. AGES OF DECEDENTS AND DEATH RATES PER 1000 LIVING AT GIVEN AGES.

AGE.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Death Rate per 1000.
Under 5 years	662	604	793	900	916	959	1743	1232	1078	789	639	702	11017	49.49
Under 1 year	410	419	553	627	593	682	1305	819	705	497	337	389	7336	141.83
From 1 to 2 years	87	84	122	134	143	129	306	264	238	139	106	121	1873	39.85
2 to 3	80	42	67	66	81	66	62	81	54	62	100	87	848	19.32
3 to 4	50	39	22	46	50	47	41	37	34	50	54	63	533	12.59
4 to 5	35	20	29	27	49	35	29	31	47	41	42	42	427	11.35
5 to 10	83	63	72	95	125	87	75	92	79	124	118	123	1136	5.71
10 to 20	101	64	86	113	116	99	88	74	97	90	64	83	1075	3.10
20 to 30	231	160	200	235	226	202	238	186	201	194	166	179	2418	8.63
30 to 40	189	158	169	221	204	213	180	186	198	198	181	205	2302	11.75
40 to 50	153	133	150	174	176	145	132	138	124	154	130	127	1736	12.31
50 to 60	134	109	120	139	133	120	120	129	122	140	126	118	1510	16.06
60 to 70	127	106	120	140	113	98	111	117	111	99	100	125	1367	22.94
70 to 80	89	71	74	77	91	70	63	68	66	86	75	88	918	45.04
80 to 90	29	29	34	35	31	29	26	24	19	36	32	27	351	52.64
90 to 100	10	2	3	4	2	7	4	5	2	4	2	4	49	
100 years and upwards	....	....	....	..	....	1	....	....	....	2	....	....	3	
Unknown	....	2	....	1	2	3	....	1	1	....	....	....	10	
Total	1808	1501	1821	2134	2135	2033	2780	2252	2098	1916	1633	1781	23892	15.24

III. NATIVITY, SEX, SOCIAL RELATION AND COLOR OF DECEDENTS.

NATIVITY.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
PLACE OF BIRTH.													
Chicago	699	656	806	878	885	916	1726	1297	1232	876	751	847	11569
United States, ex Chicago	446	333	443	537	521	525	449	370	289	396	312	335	4956
Germany	197	181	183	245	226	201	203	211	205	231	195	221	2499
Ireland	143	112	112	155	128	111	136	106	101	129	123	146	1502
Sweden	60	34	43	49	55	40	45	43	59	47	37	44	556
Bohemia	45	19	23	39	42	33	12	40	47	41	32	32	405
England	32	39	34	29	36	30	30	38	25	32	31	25	381
Canada	24	18	33	41	27	24	32	18	22	28	30	33	330
Norway	41	22	22	26	27	22	25	13	22	30	34	30	314
Poland	21	19	15	18	28	19	29	24	18	18	14	11	234
Other foreign countries	63	36	64	66	54	76	54	57	45	47	47	32	641
Unknown	37	32	43	51	106	36	39	35	33	41	27	25	505
Total	1808	1501	1821	2134	2135	2033	2780	2252	2098	1916	1633	1781	23892
SEX.													
Males	952	829	980	1187	1183	1167	1516	1220	1158	1023	874	924	13013
Females	856	672	841	947	952	866	1264	1032	940	893	759	857	10879
Total	1808	1501	1821	2134	2135	2033	2780	2252	2098	1916	1633	1781	23892
SOCIAL RELATION.													
Single	1071	911	1189	1408	1435	1382	2138	1602	1473	1245	1011	1104	15969
Married	547	442	463	545	522	486	502	488	474	496	466	497	5928
Widows	141	96	120	130	109	111	86	106	115	122	95	117	1348
Widowers	49	52	49	51	69	54	54	56	36	53	61	63	647
Total	1808	1501	1821	2134	2135	2033	2780	2252	2098	1916	1633	1781	23892
COLOR.													
White	1782	1474	1750	2042	2040	1972	2722	2201	2055	1868	1590	1732	23228
Colored	26	27	71	92	95	61	58	51	43	48	43	49	664
Total	1808	1501	1821	2134	2135	2033	2780	2252	2098	1916	1633	1781	23892

IV. SUMMARY OF DEATHS FROM CLASSIFIED CAUSES OF DEATH BY MONTHS: 1894.

CAUSES OF DEATH.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
GENERAL DISEASES:													
Febrile or Zymotic	246	195	258	307	412	335	228	247	258	256	277	267	3286
Diarrheal	15	9	20	24	32	149	1090	679	516	258	78	66	2936
Septic	32	28	33	44	28	21	46	19	24	17	22	40	354
Cancerous	47	35	38	54	57	50	56	61	63	59	52	68	640
Tuberculous	204	178	210	219	253	223	210	222	217	190	171	202	2499
Developmental, infantile	91	84	94	107	99	104	137	117	127	109	75	91	1235
senile	40	27	27	41	41	44	35	30	25	39	23	37	409
Other general diseases	41	31	28	43	34	26	28	33	35	32	40	31	402
Total	716	587	708	839	956	952	1830	1408	1265	960	738	802	11761
LOCAL DISEASES:													
Nervous system	242	242	291	280	271	273	295	218	242	216	195	194	2959
Circulatory system	116	76	97	122	95	93	91	80	80	99	94	91	1134
Respiratory system	335	252	299	463	398	296	152	166	180	274	318	400	3533
Digestive system	155	139	202	187	178	181	130	124	94	107	77	80	1654
Urinary system	79	88	89	73	77	76	83	56	61	83	68	68	901
Reproductive system	43	22	35	28	26	16	18	21	21	17	14	24	285
Other local diseases	20	12	6	3	4	10	6	13	8	13	12	17	124
Total	990	831	1019	1156	1049	945	775	678	686	809	778	874	10590
VIOLENCE:													
Misadventure or negligence	71	61	70	108	101	96	147	131	112	112	93	79	1181
Homicide	6	3	5	6	4	17	7	3	6	4	....	....	61
Suicide	25	18	18	25	25	22	21	30	29	31	24	26	294
Unknown	....	1	....	....	....	1	....	2	....	....	....	....	4
Execution	....	....	1	....	....	....	....	....	....	....	....	....	1
Total	102	83	94	139	130	136	175	166	147	147	117	105	1541
Total all causes	1808	1501	1821	2134	2135	2033	2780	2252	2098	1916	1633	1781	23892

V. TOTAL NUMBER OF DEATHS FROM THE TWENTY PRINCIPAL CAUSES OF DEATH, BY MONTHS: 1894.

CAUSES OF DEATH.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Diarrheal diseases	15	9	20	24	32	149	1090	679	516	258	78	66	2936
Tubercular diseases [a	204	178	210	219	253	223	210	222	217	190	171	202	2499
Pneumonia	171	118	147	230	187	141	72	68	64	86	129	108	1521
Diphtheria [b	105	70	79	58	62	68	61	81	109	169	214	217	1293
Brain diseases	117	102	108	107	112	103	134	105	102	97	79	78	1244
Convulsions	87	99	118	132	111	122	111	78	88	82	80	81	1189
Bronchitis	89	74	87	171	154	109	46	52	62	92	82	167	1185
Heart diseases	111	68	90	109	93	80	88	69	77	95	78	80	1038
Smallpox	29	55	100	157	253	171	51	53	31	40	51	42	1033
Infantile marasmus	68	53	62	76	68	81	76	95	107	83	60	72	901
Cancer	47	35	38	54	57	50	56	61	63	59	52	68	640
Typhoid fever	46	26	27	30	31	31	37	52	71	68	39	34	492
Nephritis, chronic	14	22	22	6	21	37	52	35	30	44	32	29	344
acute	39	50	37	31	31	16	16	14	17	23	29	23	326
Puerperal diseases	36	26	28	21	19	16	37	21	26	14	19	28	291
Cerebro-spinal fever	16	19	23	20	18	34	35	15	24	15	14	16	249
Septic diseases [c	24	18	25	39	23	15	21	10	13	9	10	23	230
Whooping cough	16	10	11	14	23	15	24	35	38	8	11	5	210
Scarlet fever	30	23	16	18	13	16	17	19	5	8	10	15	190
Measles	10	9	26	23	20	20	20	17	8	7	4	18	182
Total	1274	1064	1274	1539	1581	1497	2254	1781	1668	1447	1242	1372	17993

a] Including *Consumption*, 2155.
b] Including 80 per cent of 565 deaths reported as from "*Croup*."
c] Exclusive of 124 deaths from *Puerperal septicemia*, which is included in *Puerperal diseases*.

VI. MORTALITY FROM ALL CAUSES BY WARDS AND MONTHS: 1894.

TOTAL DEATHS IN	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Ward First	23	14	26	18	16	17	21	12	15	8	14	15	199
Second	28	27	21	35	34	31	42	20	20	32	17	22	329
Third	31	30	28	42	24	31	35	28	21	25	23	32	350
Fourth	28	24	27	35	33	31	34	18	26	23	36	23	338
Fifth	47	35	43	45	56	50	81	59	77	69	59	52	673
Sixth	70	46	46	84	74	82	159	93	105	82	81	65	987
Seventh	42	33	48	44	57	56	73	73	62	39	28	35	590
Eighth	47	23	38	40	62	73	85	81	63	42	44	49	647
Ninth	52	39	41	68	75	71	112	70	71	57	64	66	786
Tenth	72	67	88	113	110	94	163	120	109	82	69	73	1160
Eleventh	40	33	39	35	34	32	31	30	33	28	18	28	381
Twelfth	67	56	60	72	77	79	50	58	44	62	49	47	721
Thirteenth	42	29	48	49	41	31	70	40	51	47	46	46	540
Fourteenth	50	46	65	81	67	68	91	79	72	67	64	69	819
Fifteenth	79	55	58	74	74	68	125	81	74	63	46	60	857
Sixteenth	66	56	73	85	68	90	173	131	101	91	75	81	1090
Seventeenth	31	26	26	41	32	21	47	26	33	27	25	21	356
Eighteenth	10	29	21	24	27	21	37	16	17	21	18	15	256
Nineteenth	67	56	71	65	73	70	99	78	68	52	49	57	805
Twentieth	17	19	29	34	32	28	38	29	35	22	25	22	330
Twenty-first	42	34	42	51	47	32	54	37	36	37	28	23	463
Twenty-second	37	26	35	35	34	35	44	31	38	40	25	36	416
Twenty-third	48	43	53	54	58	31	55	60	51	46	43	40	582
Twenty-fourth	17	22	17	28	27	16	16	23	21	16	17	20	240
Twenty-fifth	48	28	34	39	26	25	39	37	34	24	18	36	388
Twenty-sixth	52	35	40	67	40	49	60	66	54	44	56	46	609
Twenty-seventh	22	21	27	22	18	20	36	34	20	25	15	19	279
Twenty-eighth	21	10	15	13	19	24	31	26	25	26	8	10	234
Twenty-ninth	25	32	42	43	44	60	78	47	71	46	43	54	585
Thirtieth	82	80	82	99	98	98	151	107	105	108	73	114	1197
Thirty-first	36	30	57	63	45	43	50	31	37	37	30	50	509
Thirty-second	46	31	45	39	41	29	33	42	31	32	28	40	437
Thirty-third	34	29	39	42	39	32	62	74	57	43	41	37	529
Thirty-fourth	48	44	44	53	60	56	83	79	63	61	53	60	704
Public Institutions	222	206	244	258	311	294	242	243	199	240	182	212	2853
Violence	119	87	109	144	162	145	180	173	159	152	123	100	1653
Total	1808	1501	1821	2134	2135	2033	2780	2252	2098	1916	1633	1781	23892

VII. MORTALITY OF CHILDREN, BY WARDS AND MONTHS: 1894.

DEATHS UNDER FIVE YEARS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Ward First	8	6	12	6	5	8	13	6	5	4	2	7	82
Second	10	3	11	9	9	10	20	11	8	16	7	8	122
Third	6	10	10	9	4	6	16	9	7	11	9	5	102
Fourth	12	8	10	10	7	11	20	6	5	3	9	7	108
Fifth	22	17	16	19	37	27	52	37	44	39	20	27	357
Sixth	36	28	29	49	55	59	118	60	83	49	46	32	644
Seventh	21	19	27	24	32	37	57	50	44	18	17	18	364
Eighth	28	13	20	19	29	53	61	59	46	22	20	21	391
Ninth	19	17	24	42	41	54	85	52	51	33	31	34	483
Tenth	36	32	55	61	78	51	129	82	67	58	45	37	731
Eleventh	12	5	17	20	13	14	21	13	12	10	3	7	147
Twelfth	19	15	21	26	27	30	25	26	18	20	11	12	250
Thirteenth	9	13	24	21	20	20	44	27	26	17	17	13	251
Fourteenth	18	21	36	43	34	33	68	51	41	28	32	29	434
Fifteenth	35	23	37	47	39	46	96	49	48	36	17	29	502
Sixteenth	37	31	38	59	40	52	147	109	76	52	42	44	727
Seventeenth	16	9	16	24	19	12	32	14	23	15	5	5	200
Eighteenth	1	4	9	7	12	7	26	7	8	6	6	5	98
Nineteenth	34	26	37	32	33	37	68	51	40	24	18	21	421
Twentieth	9	9	12	15	18	15	26	20	16	11	10	10	171
Twenty-first	12	17	22	18	15	13	35	22	19	16	7	6	202
Twenty-second	18	11	15	11	11	12	30	19	20	13	11	15	186
Twenty-third	17	23	34	29	29	16	38	32	33	20	17	17	305
Twenty-fourth	8	10	4	10	6	4	9	10	8	5	5	7	86
Twenty-fifth	17	11	15	18	10	12	20	19	13	8	6	20	169
Twenty-sixth	29	28	25	37	26	21	34	45	32	18	24	24	343
Twenty-seventh	9	9	14	10	11	10	31	25	15	13	5	7	159
Twenty-eighth	4	7	8	4	7	14	23	17	16	9	2	9	120
Twenty-ninth	13	17	19	20	26	35	56	31	50	23	24	26	340
Thirtieth	34	40	43	56	53	50	109	58	63	54	39	64	663
Thirty-first	17	18	27	37	18	22	33	19	14	19	14	24	262
Thirty-second	13	8	8	12	10	12	16	18	8	10	4	10	129
Thirty-third	14	17	22	23	23	15	44	57	38	24	25	22	324
Thirty-fourth	23	30	20	20	30	32	55	49	32	26	21	32	370
Public Institutions	40	39	48	45	81	102	75	61	41	52	45	45	674
Violence	6	10	8	8	8	7	11	11	8	7	13	3	99
Total	662	604	793	900	916	959	1743	1232	1078	789	639	702	11 019
Premature births	72	78	59	53	44	81	94	68	85	85	60	95	874
Still-births	171	146	161	149	194	126	161	144	124	145	110	145	1776
Total	243	224	220	202	238	207	255	212	209	230	170	240	2650

VIII. DEATHS FROM FEBRILE OR ZYMOTIC DISEASES, BY WARDS AND MONTHS: 1894.

FEBRILE OR ZYMOTIC DEATHS IN	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Ward First	3	2	4	3	2	2	2	....	1	1	....	1	21
Second	3	4	6	7	2	....	3	3	....	2	3	2	35
Third	6	4	1	5	2	4	2	....	1	....	3	2	30
Fourth	4	4	5	1	1	5	3	....	2	2	4	4	35
Fifth	6	3	3	7	13	6	9	8	12	11	17	15	110
Sixth	13	6	11	8	7	10	13	9	18	18	25	20	158
Seventh	12	2	1	3	8	5	4	7	7	6	1	6	62
Eighth	4	3	3	10	23	5	10	9	9	11	8	8	103
Ninth	8	3	4	17	16	20	11	15	15	17	19	10	155
Tenth	14	15	20	51	35	26	12	25	20	22	22	24	286
Eleventh	7	....	4	3	2	11	1	2	4	3	1	1	39
Twelfth	11	5	7	4	13	6	2	6	4	5	7	9	79
Thirteenth	3	3	8	7	6	6	5	3	7	7	7	3	65
Fourteenth	7	9	9	5	4	15	9	10	10	22	22	22	144
Fifteenth	24	11	12	10	9	12	7	11	15	18	13	17	159
Sixteenth	8	9	7	12	7	11	12	16	6	13	11	22	134
Seventeenth	5	4	4	4	5	2	4	3	5	3	5	4	48
Eighteenth	2	2	4	1	3	1	4	....	3	3	4	2	29
Nineteenth	7	9	10	9	8	7	5	8	5	11	8	4	91
Twentieth	3	3	5	1	5	9	9	5	10	4	6	6	66
Twenty-first	10	7	4	6	9	4	7	6	4	6	5	1	69
Twenty-second	1	6	3	6	1	3	3	3	7	4	9	2	48
Twenty-third	3	6	7	5	9	3	9	5	8	13	5	6	79
Twenty-fourth	3	2	4	5	2	....	2	5	1	....	....	1	25
Twenty-fifth	20	6	4	6	2	3	2	2	5	6	3	13	72
Twenty-sixth	12	12	3	8	7	7	4	8	11	7	14	16	109
Twenty-seventh	9	3	8	1	1	....	3	2	5	3	9	3	47
Twenty-eighth	4	....	2	1	1	3	6	2	3	5	5	5	37
Twenty-ninth	2	2	11	11	7	3	9	5	7	9	13	9	88
Thirtieth	13	13	10	16	25	16	9	19	19	20	15	30	205
Thirty-first	5	6	6	8	6	7	1	3	7	5	4	12	70
Thirty-second	5	2	2	7	3	4	4	4	5	1	5	6	48
Thirty-third	4	3	5	2	3	2	3	5	5	9	11	8	60
Thirty-fourth	7	4	5	10	6	7	10	15	15	16	20	24	139
Public Institutions	44	64	90	80	175	137	53	56	43	52	60	51	905
Total	292	237	292	340	428	362	252	280	299	335	364	369	3850

IX. Deaths from Consumption, by Wards and Months: 1894.

Consumption deaths in	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Ward First	4	2	5	2	....	2	1	1	4	1	5	....	27
Second	2	1	1	1	3	4	3	1	3	2	3	3	27
Third	1	3	5	7	9	8	5	4	3	6	4	5	60
Fourth	2	2	3	3	7	4	2	1	3	4	6	3	40
Fifth	4	3	5	6	5	3	7	9	6	6	7	11	72
Sixth	5	2	3	9	3	5	8	8	6	2	4	4	59
Seventh	3	3	12	4	9	4	3	9	3	4	1	5	60
Eighth	5	....	5	4	9	3	6	6	6	5	8	6	63
Ninth	8	5	3	7	7	4	5	4	3	3	3	10	62
Tenth	2	7	8	4	10	10	9	6	9	3	4	5	77
Eleventh	4	7	3	3	....	3	2	3	3	1	5	2	36
Twelfth	6	6	4	10	9	5	7	6	8	6	4	3	74
Thirteenth	7	1	4	5	4	4	3	3	4	6	4	4	49
Fourteenth	3	7	9	15	7	9	6	9	7	5	6	3	86
Fifteenth	5	7	5	4	8	9	4	5	6	6	5	8	72
Sixteenth	7	4	4	5	5	12	6	6	5	11	5	5	75
Seventeenth	1	5	1	3	2	....	2	2	3	3	3	3	28
Eighteenth	1	6	4	6	5	2	3	5	5	1	3	3	44
Nineteenth	9	4	8	7	12	5	9	8	7	3	5	9	86
Twentieth	1	3	3	6	2	....	....	2	2	1	3	2	25
Twenty-first	7	7	4	8	6	3	4	2	5	4	5	5	60
Twenty-second	8	1	3	5	7	3	1	4	6	1	1	4	44
Twenty-third	7	7	6	4	7	3	8	12	4	7	9	6	80
Twenty-fourth	1	1	....	1	7	....	1	4	2	3	1	6	27
Twenty-fifth	3	4	2	3	3	4	2	8	4	3	3	2	41
Twenty-sixth	3	4	3	8	3	7	4	2	5	7	6	2	54
Twenty-seventh	1	3	2	1	4	....	2	5	3	2	1	2	26
Twenty-eighth	2	....	1	1	2	3	2	1	4	5	....	1	22
Twenty-ninth	1	3	2	5	6	8	9	2	2	4	2	7	51
Thirtieth	9	5	8	5	7	12	10	10	13	7	10	9	105
Thirty-first	3	2	10	10	6	7	3	2	5	5	2	7	62
Thirty-second	4	9	7	4	7	2	1	5	6	2	2	4	53
Thirty-third	3	2	2	4	6	4	7	4	4	2	4	3	45
Thirty-fourth	5	4	7	4	8	7	3	3	8	10	2	2	63
Public Institutions	40	22	24	26	34	28	30	23	16	24	16	17	300
Total	177	152	176	200	229	187	178	185	183	165	152	171	2155

X. DEATHS FROM PNEUMONIA, BY WARDS AND MONTHS: 1894.

PNEUMONIA DEATHS IN	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Ward First	2	2	1	1	....	1	....	....	1	....	....	1	9
Second	5	5	1	2	2	2	....	1	....	1	2	3	24
Third	3	4	....	3	2	1	....	....	2	....	4	2	21
Fourth	6	2	2	5	2	....	....	....	1	3	1	2	24
Fifth	8	2	....	2	7	3	1	3	5	2	6	2	41
Sixth	8	7	7	14	12	10	5	8	4	6	10	5	96
Seventh	4	2	2	3	8	3	1	2	....	2	6	2	35
Eighth	3	5	2	3	2	9	2	7	....	2	4	2	41
Ninth	6	6	4	7	11	10	6	5	1	1	5	4	66
Tenth	5	8	3	11	11	8	6	4	7	1	4	5	73
Eleventh	3	1	7	6	1	2	....	1	....	....	2	3	26
Twelfth	5	4	4	9	9	3	1	3	1	6	4	3	52
Thirteenth	4	4	5	7	2	1	....	3	2	1	4	5	38
Fourteenth	12	3	2	10	6	4	7	2	6	2	5	3	62
Fifteenth	6	3	5	14	6	6	4	2	4	6	7	4	67
Sixteenth	8	8	10	12	7	6	5	2	2	1	7	5	73
Seventeenth	3	1	....	10	5	....	2	....	1	....	2	1	25
Eighteenth	1	....	2	1	3	....	....	....	....	1	2	1	11
Nineteenth	10	5	5	8	11	8	2	3	1	7	4	3	67
Twentieth	2	2	2	5	5	1	3	1	2	....	1	....	24
Twenty-first	....	3	2	6	2	2	....	....	2	2	2	3	24
Twenty-second	2	2	6	1	1	....	1	2	2	1	2	4	24
Twenty-third	3	3	7	12	8	7	....	2	2	5	5	3	57
Twenty-fourth	2	1	3	3	6	....	....	....	....	....	1	....	16
Twenty-fifth	4	1	2	5	2	2	1	....	....	1	....	2	20
Twenty-sixth	5	1	4	5	6	3	....	1	2	5	3	3	38
Twenty-seventh	3	2	3	1	....	....	....	....	....	....	1	....	10
Twenty-eighth	3	3	....	1	1	2	1	2	1	1	....	1	16
Twenty-ninth	4	2	9	10	5	12	4	....	1	4	5	4	60
Thirtieth	13	6	9	16	12	12	4	2	3	3	8	3	91
Thirty-first	2	2	4	7	4	7	3	....	2	1	3	1	36
Thirty-second	4	5	4	4	4	2	1	1	....	3	3	6	37
Thirty-third	1	1	4	6	5	2	1	4	1	1	10	1	37
Thirty-fourth	5	5	5	6	9	4	3	3	1	3	2	5	51
Public Institutions	16	7	21	14	10	8	8	4	7	14	4	16	129
Total	171	118	147	230	187	141	72	68	64	86	129	108	1521

XI. DEATHS FROM DIPHTHERIA, BY WARDS AND MONTHS: 1894.

DIPHTHERIA DEATHS IN	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Ward First	....	....	....	....	....	....	....	....	...	....	....	....	......
Second	1	..	1	...	1	....	1	....	....	....	2	2	8
Third	1	1	1	1	1	....	....	....	....	....	....	1	6
Fourth	3	1	3	....	....	1	....	....	....	....	1	3	12
Fifth	3	1	2	2	10	1	4	1	3	3	5	3	38
Sixth	4	1	2	....	1	3	1	2	9	4	10	7	44
Seventh	2	1	....	....	1	2	1	1	2	1	....	2	13
Eighth	2	1	....	1	3	3	4	....	2	3	6	3	28
Ninth	2	1	1	2	....	1	2	4	6	7	7	4	37
Tenth	2	....	....	2	....	1	3	8	7	8	9	9	49
Eleventh	4	....	2	....	1	1	....	....	1	1	....	....	10
Twelfth	3	1	....	....	1	....	....	....	....	1	2	3	11
Thirteenth	....	1	3	....	2	1	....	....	2	1	5	1	16
Fourteenth	2	3	3	2	1	4	2	5	6	6	15	8	57
Fifteenth	6	3	2	2	2	....	1	1	3	6	5	6	37
Sixteenth	3	2	1	3	....	1	4	3	2	4	2	6	31
Seventeenth	2	....	2	....	....	....	1	....	....	1	1	....	7
Eighteenth	....	....	....	....	....	....	....	....	2	....	3	....	5
Nineteenth	1	2	....	....	1	1	1	4	1	3	5	....	19
Twentieth	2	2	1	....	....	2	3	4	2	2	3	5	26
Twenty-first	5	3	1	1	1	....	....	1	1	4	2	....	19
Twenty-second	....	1	....	1	....	....	....	1	2	4	6	....	15
Twenty-third	....	1	2	2	2	1	....	3	....	3	2	3	19
Twenty-fourth	....	1	....	....	....	....	....	1	....	....	....	....	2
Twenty-fifth	7	1	1	1	....	1	....	....	....	4	1	2	18
Twenty-sixth	6	4	1	2	4	3	....	5	5	4	7	8	49
Twenty-seventh	2	1	8	....	....	....	2	....	....	1	7	1	22
Twenty-eighth	2	....	....	....	....	2	2	....	1	4	1	2	14
Twenty-ninth	....	....	6	2	2	....	1	1	1	3	5	2	23
Thirtieth	4	5	1	3	7	11	5	6	4	11	7	18	82
Thirty-first	1	3	....	2	....	....	....	1	1	3	1	8	20
Thirty-second	2	....	....	2	....	3	....	....	2	....	1	2	12
Thirty-third	....	2	3	....	....	1	1	...	1	4	3	3	18
Thirty-fourth	2	1	1	4	4	1	1	3	10	6	12	17	62
Public Institutions	....	1	1	....	....	....	1	....	....	2	4	3	12
Add *Croup*, 80%	31	25	30	23	17	23	20	26	33	65	74	85	452
Total	105	70	79	58	62	68	61	81	109	169	214	217	1293

XIV. DEATHS FROM SCARLET FEVER, BY WARDS AND MONTHS: 1894.

SCARLET-FEVER DEATHS IN	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Ward First	1	....	....	....	....	....	....	....	....	....	....	....	1
Second	....	....	....	....	1	....	....	....	....	....	....	....	1
Third	1	....	....	1	....	....	....	....	....	....	....	....	2
Fourth	....	2	....	....	....	....	....	....	....	....	1	....	3
Fifth	....	....	....	3	....	....	....	....	1	1	3	....	8
Sixth	....	1	....	....	....	1	....	1	....	....	....	....	3
Seventh	2	....	....	....	....	....	....	....	....	....	....	....	2
Eighth	1	....	....	....	....	....	1	....	....	....	....	....	2
Ninth	1	....	....	....	....	1	....	....	....	....	....	....	2
Tenth	2	7	....	....	....	2	....	....	....	....	....	2	13
Eleventh	....	....	....	....	....	....	....	1	....	....	....	....	1
Twelfth	....	....	....	....	1	....	1	....	....	....	1	....	3
Thirteenth	1	....	1	....	....	2	....	....	....	....	....	....	4
Fourteenth	1	1	....	....	....	1	1	1	....	....	....	....	5
Fifteenth	5	1	....	2	....	2	1	2	....	....	....	3	16
Sixteenth	....	....	....	....	....	1	4	3	2	....	....	....	10
Seventeenth	1	....	....	1	....	....	....	1	....	....	....	1	4
Eighteenth	....	....	2	....	....	....	....	....	....	1	....	....	3
Nineteenth	....	....	....	2	1	....	....	....	....	....	....	....	3
Twentieth	1	....	2	....	1	2	2	....	....	....	....	....	8
Twenty-first	1	1	....	2	1	....	2	....	....	....	....	....	7
Twenty-second	....	....	1	1	....	....	1	1	....	....	....	....	4
Twenty-third	....	....	....	....	3	....	1	....	....	2	....	1	7
Twenty-fourth	....	....	2	1	1	....	....	....	....	....	....	....	4
Twenty-fifth	1	2	1	2	....	....	....	....	....	1	....	2	9
Twenty-sixth	1	....	1	....	....	....	....	....	....	....	....	....	2
Twenty-seventh	3	1	....	....	....	....	....	....	....	....	....	....	4
Twenty-eighth	1	....	....	....	....	....	....	....	....	....	1	....	2
Twenty-ninth	....	1	1	....	1	1	....	2	....	1	1	1	9
Thirtieth	1	2	....	2	....	1	....	3	1	1	1	1	13
Thirty-first	....	....	2	1	1	1	....	....	....	....	....	....	5
Thirty-second	....	1	....	....	....	....	....	1	1	....	....	1	4
Thirty-third	1	1	....	....	2	....	....	....	....	....	2	1	7
Thirty-fourth	2	....	....	....	....	1	3	2	....	1	....	2	11
Public Institutions	2	2	3	....	....	....	....	1	....	....	....	....	8
Total	30	23	16	18	13	16	17	19	5	8	10	15	190

XV. DEATHS FROM SMALLPOX, BY WARDS AND MONTHS: 1894.

SMALLPOX DEATHS IN	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Ward First	4	10	12	17	13	3	1	2	1	....	....	3	66
Second	....	2	4	7	5	2	....	....	1	....	....	....	21
Third	....	1	2	5	3	....	....	....	....	....	....	....	11
Fourth	2	....	2	4	2	2	....	....	....	....	....	1	13
Fifth	....	....	1	3	3	2	....	....	....	....	....	3	12
Sixth	...	3	3	4	4	3	1	....	....	....	....	2	20
Seventh	....	2	4	5	5	....	....	....	....	....	....	....	16
Eighth	....	....	....	2	13	3	1	....	....	....	....	....	19
Ninth	3	2	4	6	20	6	2	4	....	4	....	....	51
Tenth	5	10	26	59	70	65	17	18	22	21	17	14	344
Eleventh	2	....	1	4	3	4	2	2	....	....	....	....	18
Twelfth	3	4	6	9	11	6	2	2	2	5	4	3	57
Thirteenth	1	2	3	1	2	6	1	....	....	....	....	1	17
Fourteenth	....	2	3	1	3	4	....	....	....	....	3	3	19
Fifteenth	....	1	5	1	2	...	2	1	....	3	1	2	18
Sixteenth	2	1	2	2	1	4	2	....	....	2	4	2	22
Seventeenth	2	2	1	3	3	1	....	....	....	....	4	2	18
Eighteenth	26	21	9	9	11	3	1	1	1	....	....	....	82
Nineteenth	1	3	1	11	14	12	....	3	....	3	2	....	50
Twentieth	....	....	....	....	....	....	....	1	....	....	....	1	2
Twenty-first	....	....	....	....	....	....	....	....	....	....	....	2	2
Twenty-second	...	1	....	1	....	....	....	....	....	....	....	....	2
Twenty-third	3	4	2	3	2	2	....	....	....	....	2	...	18
Twenty-fourth	....	....	2	1	4	....	....	....	....	....	....	....	7
Twenty-fifth	....	....	....	....	....	....	....	2	....	....	....	....	2
Twenty-sixth	....	....	1	6	4	3	3	....	....	....	1	2	20
Twenty-seventh	....	....	....	....	....	....	....	....	....	....	....	1	1
Twenty-eighth	....	....	1	6	4	3	3	....	....	....	2	2	21
Twenty-ninth	....	....	2	5	4	2	....	....	1	....	....	....	14
Thirtieth	....	1	....	5	5	2	1	....	1	....	....	....	15
Thirty-first	....	....	2	2	2	....	....	1	....	....	....	....	7
Thirty-second	....	....	....	3	4	2	....	....	....	....	....	....	9
Thirty-third	....	....	....	....	....	....	....	....	....	....	....	....	......
Thirty-fourth	2	....	1	1	5	....	....	....	....	....	....	2	11
Non-residents	....	....	....	....	....	....	....	....	....	....	....	....	28
Total	56	72	100	186	222	140	39	37	29	38	40	46	1033

XVI. DEATHS IN HOSPITALS, PUBLIC INSTITUTIONS, ETC., BY MONTHS: 1894.

INSTITUTIONS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Alexian Bros. Hospital	12	6	10	10	10	8	6	14	11	12	7	17	123
Augustana Hospital	....	....	2	....	1	....	1	3	7	6	1	3	24
Bennett Hospital	....	....	1	....	....	....	....	1	....	....	....	....	2
Chicago Charity Hospital	1	1	1	1	....	1	....	1	4	....	....	2	12
Chicago Emergency Hospital	2	....	2	4	1	3	1	....	....	1	....	1	15
Chicago Homeopathic Hospital	....	1	1	....	....	....	....	....	....	....	....	....	2
Chicago Smallpox Hospital	25	51	80	77	166	124	44	43	26	31	44	38	749
Cook County Hospital	90	56	66	78	50	57	72	83	66	80	58	66	822
Foundlings' Home	....	....	....	....	2	2	2	3	2	1	....	5	17
German Hospital	5	1	3	5	3	....	....	3	2	3	1	6	32
Hahnemann Hospital	....	....	1	2	....	....	3	....	....	3	1	2	12
Home for Incurables	1	1	2	2	....	4	2	3	3	5	2	2	27
Home for the Aged	2	3	6	2	3	4	3	8	3	2	3	1	40
Lincoln Park Sanitarium	...	....	3	2	2	....	1	2	3	7	3	2	25
Marine (U. S.) Hospital	1	1	1	1	1	....	1	1	2	5	2	2	18
Maurice Porter Mem. Hospital	....	....	....	....	....	....	....	2	....	....	....	....	2
Mercy Hospital	10	3	3	8	4	9	15	7	6	9	1	4	79
Michael Reese Hospital	5	5	7	2	5	5	4	7	5	8	6	....	59
National Temperance Hospital	....	....	....	2	1	1	1	1	....	....	....	....	6
Old People's Home	....	....	....	....	....	....	....	1	....	....	....	1	2
Presbyterian Hospital	4	7	7	8	15	10	14	7	11	15	13	9	120
St. Elizabeth's Hospital	10	11	5	8	7	8	9	9	12	9	5	8	101
St. Joseph's Hospital	4	3	....	1	6	1	2	2	3	2	3	3	30
St. Luke's Hospital	5	12	7	10	5	9	6	7	3	6	3	6	79
St. Vincent's Infant Asylum	25	22	23	16	21	23	19	12	10	16	14	14	215
Swedish Home of Mercy	...	4	1	....	1	1	3	1	6	1	1	....	19
Wesley Hospital	5	3	....	....	....	6	....	....	1	....	1	....	16
Woman's and Children's Hosp.	4	3	2	3	....	3	4	3	2	1	2	1	28
Woman's Hospital of Chicago	2	4	2	4	....	4	4	1	....	2	....	1	24
Other Hospitals	2	1	1	5	3	6	8	7	5	10	11	11	70
Other Asylums	1	1	4	2	1	2	8	3	2	3	....	3	30
Hotels and Public Places	6	6	3	5	3	3	9	8	4	2	....	4	53
Totals	222	206	244	258	311	294	242	243	199	240	182	212	2 853

XVII. NUMBER OF CASES OF DIPHTHERIA REPORTED IN 1893–1894: TOTALS FOR WARDS IN 1893; MONTHLY RETURNS BY WARDS IN 1894.

DIPHTHERIA CASES REPORTED IN	Ward totals, 1893.	1894.												Ward totals, 1894.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
Ward First	14	3	1	0	0	2	0	0	0	0	0	0	0	6
Second	60	5	1	2	0	3	0	1	2	2	0	3	3	22
Third	83	4	6	7	5	2	1	0	0	0	0	5	2	32
Fourth	75	4	5	7	1	3	2	2	2	2	6	7	8	49
Fifth	78	10	6	5	8	7	4	2	1	10	6	9	7	75
Sixth	79	3	6	4	1	3	4	2	4	4	10	12	9	62
Seventh	49	5	2	7	2	3	6	2	2	3	4	2	9	47
Eighth	32	1	1	1	0	5	2	1	1	1	3	5	4	25
Ninth	70	6	1	3	1	2	4	0	4	13	15	4	4	57
Tenth	73	3	3	5	7	3	8	5	15	8	10	16	11	94
Eleventh	74	4	0	3	1	2	0	3	0	1	2	2	1	19
Twelfth	140	12	8	1	6	6	5	1	1	4	3	11	17	75
Thirteenth	74	10	1	4	1	1	1	3	1	4	4	11	7	48
Fourteenth	126	9	5	4	4	8	8	9	2	5	10	21	16	101
Fifteenth	190	16	9	10	5	2	4	3	4	6	8	16	15	98
Sixteenth	114	2	2	2	2	3	2	5	1	4	10	8	10	51
Seventeenth	53	1	1	1	1	3	0	3	0	3	3	4	1	21
Eighteenth	21	1	0	5	0	1	1	0	1	1	1	2	1	14
Nineteenth	56	2	2	3	0	1	2	1	11	2	6	6	1	37
Twentieth	43	4	4	2	2	3	3	1	3	0	4	5	6	40
Twenty-first	61	4	8	0	6	2	4	1	3	2	7	3	6	46
Twenty-second	37	1	2	3	1	4	1	0	2	5	3	10	2	34
Twenty-third	79	7	6	4	1	8	4	0	3	2	1	5	6	47
Twenty-fourth	50	6	1	1	1	1	3	2	0	1	0	4	1	21
Twenty-fifth	71	11	10	4	2	2	3	1	4	1	5	9	13	65
Twenty-sixth	99	19	14	3	1	11	5	3	5	4	21	16	18	120
Twenty-seventh	45	1	0	6	1	1	2	3	2	1	7	4	4	32
Twenty-eighth	72	3	0	3	0	2	1	1	1	1	1	0	4	17
Twenty-ninth	67	8	3	7	1	2	4	1	3	0	7	8	4	48
Thirtieth	149	9	6	5	5	12	8	8	14	4	13	18	22	124
Thirty-first	86	9	9	6	0	6	7	1	1	2	4	12	22	79
Thirty-second	94	8	3	3	5	5	6	1	2	1	7	8	17	64
Thirty-third	93	5	4	1	2	1	2	1	2	4	11	11	15	59
Thirty-fourth	97	17	3	4	5	1	4	3	15	4	29	29	54	168
Total	2604	216	135	126	78	119	113	70	111	120	221	287	326	1921

XVIII. NUMBER OF CASES OF SCARLET FEVER REPORTED IN 1893-1894: TOTALS FOR WARDS IN 1893: MONTHLY RETURNS BY WARDS IN 1894.

SCARLET-FEVER CASES REPORTED IN	Ward totals, 1893.	1894.												Ward totals, 1894.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
Ward First	12	2	0	1	0	0	0	0	1	0	0	0	0	4
Second	29	3	2	1	0	3	2	1	1	0	0	6	7	26
Third	73	5	2	2	2	3	0	1	1	0	2	3	2	23
Fourth	97	5	1	2	0	3	1	0	1	3	11	14	10	51
Fifth	114	3	2	4	2	3	4	1	2	5	6	9	9	50
Sixth	61	2	7	8	4	3	2	5	4	1	2	1	4	43
Seventh	78	11	3	1	2	4	5	2	3	1	3	1	2	38
Eighth	36	0	0	4	1	2	1	0	1	2	2	0	1	14
Ninth	51	4	4	4	3	4	3	3	2	0	7	1	3	38
Tenth	116	14	6	11	10	6	5	3	3	5	15	6	4	91
Eleventh	98	11	0	2	2	6	5	1	2	1	3	2	9	45
Twelfth	209	17	11	19	9	9	14	11	10	6	14	12	18	150
Thirteenth	144	15	7	7	9	10	11	4	8	8	5	8	5	97
Fourteenth	157	18	5	5	12	12	10	3	7	5	6	2	13	98
Fifteenth	117	14	8	13	6	9	9	5	13	13	18	22	15	145
Sixteenth	104	10	4	0	2	1	2	11	6	3	10	4	6	59
Seventeenth	49	1	6	2	0	3	1	1	3	1	3	2	1	24
Eighteenth	37	6	3	2	3	5	1	0	0	0	3	1	2	26
Nineteenth	67	9	4	1	5	9	3	4	0	2	3	3	5	48
Twentieth	76	7	2	0	3	8	2	2	0	6	2	3	5	40
Twenty-first	116	9	8	4	7	5	6	3	4	4	2	4	2	58
Twenty-second	82	4	7	6	6	4	4	2	4	2	3	1	4	51
Twenty-third	91	4	1	4	6	10	4	5	4	1	3	2	3	47
Twenty-fourth	53	6	3	8	3	8	2	1	1	4	0	6	19	61
Twenty-fifth	132	29	22	6	9	8	4	5	4	4	6	8	13	118
Twenty-sixth	207	15	14	10	10	4	6	5	3	3	7	7	9	93
Twenty-seventh	48	3	4	6	4	4	0	2	1	3	5	6	4	42
Twenty-eighth	38	7	1	1	2	2	4	3	1	0	3	3	1	28
Twenty-ninth	111	6	2	1	6	6	2	1	5	1	1	11	1	43
Thirtieth	82	11	11	7	10	5	7	0	13	11	10	5	12	102
Thirty-first	137	8	6	11	7	8	3	2	3	1	3	9	6	67
Thirty-second	141	9	12	7	11	10	2	4	3	3	9	16	19	105
Thirty-third	157	5	2	10	9	1	6	5	0	9	6	6	13	72
Thirty-fourth	158	14	2	7	5	2	3	3	5	2	9	0	9	58
Total	3278	287	174	177	170	181	132	99	117	110	182	192	236	2057

XIX. NUMBER OF CASES OF SMALLPOX IN EACH WARD BY MONTHS: 1894.

SMALLPOX CASES IN	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Ward First	12	31	37	50	39	8	4	6	4	0	1	8	200
Second	1	7	12	22	15	5	1	2	3	2	2	0	72
Third	0	3	7	14	10	0	1	1	0	0	0	2	38
Fourth	5	0	5	12	7	5	2	0	0	0	0	4	43
Fifth	1	0	3	8	9	6	0	0	0	1	0	8	36
Sixth	2	9	9	14	12	9	4	0	0	0	2	7	68
Seventh	2	6	11	14	14	2	1	1	0	2	1	2	56
Eighth	2	1	2	6	40	8	3	0	1	0	2	0	65
Ninth	9	7	11	17	61	17	5	12	1	11	1	2	154
Tenth	14	30	72	171	204	189	46	48	60	56	45	35	970
Eleventh	5	1	4	12	10	13	7	5	1	1	0	0	59
Twelfth	8	12	19	27	32	18	5	5	7	15	12	8	168
Thirteenth	3	6	9	4	7	19	4	1	0	1	1	4	59
Fourteenth	1	5	8	3	10	11	0	0	0	1	9	9	57
Fifteenth	0	4	15	4	6	2	6	3	0	8	4	6	58
Sixteenth	6	4	5	7	3	12	5	1	0	7	11	5	66
Seventeenth	5	6	3	10	10	4	0	0	0	1	11	7	57
Eighteenth	78	62	26	27	32	8	3	3	4	2	0	2	247
Nineteenth	4	10	3	34	42	37	1	8	2	8	5	1	155
Twentieth	0	2	2	1	1	1	0	3	0	0	0	3	13
Twenty-first	2	1	0	1	0	1	0	0	0	0	1	5	14
Twenty-second	0	4	1	3	2	1	1	2	2	1	1	0	15
Twenty-third	9	12	7	8	6	7	0	0	1	0	5	1	56
Twenty-fourth	0	2	7	4	13	2	1	2	1	0	2	1	35
Twenty-fifth	1	0	1	1	2	0	1	5	0	1	1	0	13
Twenty-sixth	1	0	3	1	5	6	1	4	0	0	1	0	22
Twenty-seventh	0	0	0	1	1	2	0	1	0	0	2	4	11
Twenty-eighth	1	1	4	17	12	8	8	1	0	1	6	7	66
Twenty-ninth	0	1	7	15	11	7	2	1	3	1	0	1	49
Thirtieth	1	4	0	15	15	7	4	0	4	1	0	0	51
Thirty-first	1	1	6	6	6	1	0	3	0	0	0	0	24
Thirty-second	0	1	2	10	13	7	0	0	0	2	0	0	32
Thirty-third	0	0	0	1	2	1	0	0	0	0	1	2	7
Thirty-fourth	5	0	4	3	16	0	0	0	0	2	2	5	37
Residence Unknown	0	0	0	0	0	0	1	0	0	0	2	0	3
Totals	181	233	305	544	665	424	117	118	94	125	131	139	3076

TOTAL NUMBER OF CASES IN EACH DIVISION OF THE CITY:

SOUTH DIVISION. — Wards 1-6 inclusive, and 29-34 inc.	WEST DIVISION. — Wards 7-19 inclusive, and 27, 28.	NORTH DIVISION. — Wards 20-26 inclusive.
Total cases..........660	Total cases..........2248	Total cases..........168

XX. COMPARATIVE MORTALITY FROM SPECIFIED DISEASES AND MORTALITY OF CHILDREN, BY QUARTERS FOR TEN YEARS: 1885–1894.

CAUSE OF DEATH.	WINTER QUARTER, 1894.			TOTAL WINTER MORTALITY FOR THE YEARS									
	January.	February.	March.	1894	1893	1892	1891	1890	1889	1888	1887	1886	1885
Smallpox	29	55	100	184	1	....	....	....	....	....	....	2	3
Measles	10	9	26	45	100	22	102	5	96	9	145	13	20
Scarlet fever	30	23	16	69	129	152	160	74	51	41	66	70	75
Diphtheria	74	45	49	168	218	288	258	314	295	229	260	185	175
Croup	39	31	38	108	147	138	110	115	85	185	125	86	83
Whooping cough	16	10	11	37	33	41	64	55	20	60	14	27	21
Fever, typhoid	46	26	27	99	112	574	199	292	66	50	91	80	64
cerebro spinal	16	19	23	58	94	80	67	33	25	26	11	32	29
malarial	5	1	2	8	13	26	32	31	17	16	23	21	20
Diarrheal diseases	15	9	20	44	93	113	141	151	29	38	79	43	35
Other febrile or zymotic	20	7	4	31	60	92	90	57	47	72	54	61	41
Phthisis pulmonalis	177	152	176	505	609	584	563	593	358	380	386	290	316
Acute lung diseases	260	192	234	686	1486	1684	1927	1802	694	873	712	559	532
Total	737	579	726	2042	3095	3794	3713	3522	1783	1979	1966	1469	1414
Children under five years	662	604	793	3095	3000	2966	3332	2953	1734	1810	1858	1574	1413

COMPARATIVE MORTALITY OF SPRING QUARTER.

CAUSE OF DEATH.	SPRING QUARTER, 1894.			TOTAL SPRING MORTALITY FOR THE YEARS									
	April.	May.	June.	1894	1893	1892	1891	1890	1889	1888	1887	1886	1885
Smallpox	157	253	171	581	1	2	....	....	2	....	2	....	....
Measles	23	20	20	63	92	37	102	17	77	40	149	28	28
Scarlet fever	18	13	16	47	85	99	108	42	55	50	39	64	70
Diphtheria	35	45	45	125	214	183	145	183	246	179	196	214	146
Croup	29	22	28	79	103	81	87	71	65	98	83	58	60
Whooping cough	14	23	15	52	50	36	57	31	19	49	14	28	24
Fever, typhoid	30	31	31	92	174	181	711	234	46	54	71	112	91
cerebro spinal	20	18	34	72	140	54	121	44	30	68	19	34	58
malarial	4	3	2	9	26	31	47	33	13	29	15	19	27
Diarrheal diseases	24	32	149	205	172	262	350	177	88	129	233	162	187
Other febrile or zymotic	6	6	1	13	63	76	68	57	40	36	46	42	44
Phthisis pulmonalis	200	229	187	616	649	570	592	478	344	395	332	364	299
Acute lung diseases	401	341	250	992	1214	897	1416	878	496	527	516	513	389
Total	961	1036	949	2916	2992	2509	3804	2248	1519	1657	1715	1638	1423
Children under five years	906	916	958	2092	2787	2676	3542	1990	1489	1638	1726	1557	1490

COMPARATIVE MORTALITY OF SUMMER QUARTER.

CAUSE OF DEATH.	SUMMER QUARTER, 1894.			TOTAL SUMMER MORTALITY FOR THE YEARS									
	July.	August.	September.	1894	1893	1892	1891	1890	1889	1888	1887	1886	1885
Smallpox	51	53	31	135	2	....	....	....	....	....	....	....	....
Measles	20	17	8	45	21	41	41	12	25	52	38	51	24
Scarlet fever	17	19	5	41	48	53	81	30	39	41	57	40	45
Diphtheria	41	55	76	172	170	138	187	156	203	158	205	190	153
Croup	26	33	41	100	85	92	71	64	56	64	56	60	54
Whooping cough	24	35	38	97	86	58	43	71	35	54	47	44	30
Fever, typhoid	37	52	71	160	217	528	580	296	170	142	123	147	237
cerebro-spinal	35	15	24	74	92	58	57	39	29	30	22	25	37
malarial	1	1	5	7	18	61	32	32	25	34	23	34	42
Diarrheal diseases	1090	679	516	2285	1802	1347	1286	1284	1350	1018	1036	841	861
Other febral or zymotic	2	....	....	2	40	53	40	31	38	26	32	36	39
Phthisis pulmonalis	178	185	183	546	531	498	469	470	378	322	328	264	263
Acute lung diseases	118	120	126	364	399	491	351	302	269	232	222	223	193
Total	1640	1264	1124	4028	3511	3418	3238	2787	2617	2173	2189	1955	1983
Children under five years	1744	1232	1078	3511	4418	3763	3468	3174	3076	2714	2556	2256	2156

COMPARATIVE MORTALITY OF AUTUMN QUARTER.

CAUSE OF DEATH.	AUTUMN QUARTER, 1894.			TOTAL AUTUMN MORTALITY FOR THE YEARS									
	October.	November.	December.	1894	1893	1892	1891	1890	1889	1888	1887	1886	1885
Smallpox	40	51	42	133	19	....	....	....	....	....	....	....	....
Measles	7	4	18	29	21	85	20	38	6	50	9	34	4
Scarlet fever	8	10	15	33	67	78	150	47	40	52	28	46	89
Diphtheria	104	140	132	376	273	405	368	228	382	292	341	355	232
Croup	81	92	105	278	157	223	132	127	177	92	139	155	109
Whooping cough	8	11	5	24	32	29	30	44	22	20	29	13	19
Fever, typhoid	68	39	34	141	167	206	507	186	171	129	96	147	104
cerebro-spinal	15	14	16	45	62	31	56	26	26	14	29	12	18
malarial	4	4	2	10	26	21	32	25	50	17	24	33	22
Diarrheal diseases	258	78	66	402	157	145	218	105	151	71	71	88	65
Other febrile or zymotic	2	4	3	9	35	55	62	53	37	32	24	42	41
Phthisis pulmonalis	165	152	171	488	526	525	496	431	409	329	306	281	284
Acute lung diseases	178	211	275	664	925	832	873	709	616	543	402	388	290
Total	938	810	884	2632	2467	2635	2944	2019	2087	1641	1498	1594	1284
Children under five years	789	639	702	2177	2158	2257	2459	1836	1905	1331	1325	1376	1128

XXI. Deaths from the Principal Causes and Percentages of Deaths from All Causes: 1891-1894.

Causes of death.	1894.		1893.		1892.		1891.	
	Number of deaths.	Per cent. of all causes.	Number of deaths.	Per cent. of all causes.	Number of deaths.	Per cent. of all causes.	Number of deaths.	Per cent. of all causes.
Diarrheal diseases	2936	12.28	2224	8.21	1867	7.12	1995	7.20
Consumption	2155	9.01	2315	8.55	2177	8.31	2120	7.56
Pneumonia	1521	6.39	2457	9.10	2397	9.15	2898	10.43
Brain diseases	1243	5.20	1276	4.73	1187	4.53	1490	5.38
Convulsions	1189	4.97	1326	4.90	1560	5.95	1627	5.86
Bronchitis	1185	4.98	1395	5.17	1303	4.97	1495	5.40
Heart diseases	1038	4.32	1177	4.35	856	3.26	780	2.45
Smallpox	1033	4.32	23	.08	2	......	......	......
Diphtheria [a	841	3.53	975	3.60	1014	3.86	958	3.09
Cancerous diseases	640	2.69	657	2.43	546	2.08	546	1.96
Croup	565	2.37	492	1.82	534	2.03	400	1.44
Typhoid fever	492	2.06	670	2.47	1489	5.67	1997	7.19
Old age	409	1.72	518	1.91	429	1.63	456	1.64
Chronic nephritis	344	1.43	257	.95	249	.95	229	.83
Whooping cough	210	.88	210	.78	164	.63	194	.70
Scarlet fever	190	.79	329	1.21	382	1.45	499	1.08
Measles	182	.76	234	.86	185	.70	265	.95
Puerperal affections	175	.73	307	1.13	199	.76	199	.72
Violence	1541	6.44	1879	6.93	1573	5.99	1457	5.21
All other causes	6003	25.13	8362	30.97	8106	30.94	8149	29.42
Total	23892	......	27083	......	26219	......	27754	......
Annual death rate per 1000	......	15.24	......	16.92	......	18.23	......	22.20

a] Exclusive of *Croup* returned as such.

XXII. Deaths from the Principal Febrile or Zymotic Diseases: 1887-1894 Inclusive.

Causes of death.	1894	1893	1892	1891	1890	1889	1888	1887
Cholera infantum	2332	1623	1211	1122	1058	1052	874	907
morbus	53	55	53	53	58	64	47	44
Diarrhea, infantile	449	......	......	......	......	......	......	......
Diarrhea	40	145	223	375	245	167	148	162
Dysentery	61	456	380	415	356	331	293	306
Erysipelas	72	91	91	99	75	58	86	69
Cerebro-spinal fever	249	388	223	301	142	110	138	81
Scarlet fever	190	329	382	499	193	185	184	190
Typhoid fever	492	670	1489	1997	1008	453	375	381
Measles	182	234	185	265	67	204	151	341
Smallpox	1033	2	......	......	......	2	......	2
Diphtheria	1106	1167	1548	1358	1261	1509	1297	1405
Total	6592	5181	5790	6514	4463	3135	3593	3888

XXIII. DEATHS AND DEATH RATES FROM ALL CAUSES AND FROM FEBRILE OR ZYMOTIC DISEASES; DEATH RATES OF CHILDREN AND INFANTS: 1882–1894, INCLUSIVE.

YEARS.	Population.	Number of deaths.	Deaths from zymotic diseases.	Deaths per 1000 of population of zymotic diseases.	Per cent. of total mortality of zymotic diseases.	Deaths under 5 years of age.	Deaths per 1000 of population of children under 5 years of age.	Per cent. of mortality of children under 5 years of age.	Deaths of children under 1 year of age.	Deaths per 1000 of population of children under 1 year of age.	Per cent. of total mortality of children under 1 year of age.
1894	1 567 727	23892	3286	2.09	13.75	11016	7.03	4 609	7336	4.68	30.69
1893	1 600 000	27083	5993	3.74	22.12	12363	7.72	45.64	8125	5.07	30.00
1892	1 428 000	26219	6275	4.36	23.89	11662	8.11	44.48	7574	5.29	28.66
1891	1 250 000	27754	7012	5.61	25.26	12801	10.24	46.13	8208	6.56	29.57
1890	1 200 000	21869	4908	4.49	22.44	9954	8.29	45.97	6630	5.53	30.32
1889	965 000	16946	4441	4.60	26.32	8204	8.41	48.42	5008	5.07	28.88
1888	830 000	15772	3952	4.76	24.92	7533	9.08	47.74	4718	5.66	29.90
1887	760 000	15409	4164	5.48	28.89	7568	9.96	49.44	4483	5.90	39.09
1886	704 000	13690	3437	4.88	25.09	6763	9.61	49.37	4081	5.80	29.87
1885	665 000	12474	3210	4.83	25.73	6187	9.32	49.61	4000	6.02	32.08
1884	630 000	12471	3506	5.56	28.11	6666	10.58	53.45	4179	6.63	33.52
1883	580 000	11555	3053	5.26	26.42	5875	10.13	50.84	3850	6.64	33.22
1882	560 639	13234	4506	8.05	34.07	6645	11.90	50.21	4059	7.25	30.68

XXIV. POPULATION (1894), TOTAL DEATHS AND DEATH RATES PER 1000 OF POPULATION FROM ALL CAUSES, FROM THE FEBRILE OR ZYMOTIC DISEASES AND FROM TYPHOID FEVER: 1892-1893-1894.

WARD.	1894.			1893.		1892.		ZYMOTICS.						TYPHOID.					
								1894.		1893.		1892.		1894.		1893.		1892.	
	Population.	Total deaths.	Ratio.	Total deaths.	Ratio.	Total deaths.	Ratio.	No.	Ratio.	No.	Ratio.	No.	Ratio.	No.	Ratio.	No.	Ratio.	No.	Ratio.
First	35 546	199	5.60	278	5.13	333	6.83	21	0.59	43	0.79	44	0.92	3	0.08	5	0.09	6	0.12
Second	33 923	329	9.70	449	11.56	405	11.58	35	1.03	84	2.16	88	2.51	8	0.24	12	0.31	15	0.42
Third	39 999	350	8.77	466	12.00	460	13.16	30	0.75	86	2.21	87	2.48	7	0.17	8	0.21	32	0.91
Fourth	37 502	338	9.01	433	11.21	431	12.39	35	0.93	94	2.43	83	2.38	6	0.16	13	0.34	17	0.48
Fifth	51 813	673	12.99	824	16.38	908	20.05	110	2.08	210	4.17	295	6.49	13	0.25	15	0.30	64	1.41
Sixth	61 038	987	16.18	1122	19.23	1107	21.08	158	2.59	365	6.26	347	6.60	20	0.33	40	0.69	53	1.00
Seventh	44 244	590	12.34	652	11.92	699	14.18	62	1.40	189	3.45	197	3.97	11	0.24	15	0.27	42	0.85
Eighth	42 038	647	15.40	639	14.41	690	17.27	103	2.45	182	4.10	166	4.16	6	0.14	14	0.32	25	0.62
Ninth	49 641	786	16.03	815	16.28	923	20.09	155	3.12	219	4.38	242	5.26	11	0.22	19	0.38	49	1.06
Tenth	72 141	1160	16.08	1136	18.10	1018	18.02	286	3.97	325	5.28	271	4.79	8	0.11	32	0.51	51	0.90
Eleventh	43 658	381	8.73	487	10.29	533	12.51	39	0.89	105	2.22	118	2.97	6	0.11	14	0.30	31	0.72
Twelfth	65 320	721	11.04	969	14.34	858	14.11	79	1.21	184	2.72	211	3.47	26	0.40	19	0.28	51	0.83
Thirteenth	48 373	510	11.18	704	14.88	680	15.97	65	1.35	150	3.17	172	4.04	16	0.33	23	0.19	39	0.91
Fourteenth	57 942	819	14.14	905	16.53	850	17.23	144	2.49	267	4 88	226	4.58	15	0.26	21	0.38	51	1.09
Fifteenth	67 934	857	12.62	1017	15.96	936	16.48	159	2.34	288	4.56	271	4.77	17	0.25	24	0.38	61	1.07
Sixteenth	66 760	1090	16.34	1174	16.42	1252	19.46	134	2.01	360	5.03	297	4.61	12	0 18	22	0.31	65	1.01
Seventeenth	29 710	356	11.98	431	12.33	565	17.96	48	1.61	110	3.15	146	4.64	7	0.23	6	0.17	30	0.95
Eighteenth	36 758	256	6.97	354	7.94	404	10.07	29	0.79	74	1.66	82	2.04	6	0.16	6	0.13	18	0.44
Nineteenth	53 729	805	15.00	923	15.31	928	17.13	91	1.69	224	3.72	226	4.17	8	0.15	12	0.20	29	0.54
Twentieth	36 546	330	9.04	387	11.49	455	15.02	66	1.81	122	3.62	115	3.79	6	0.16	9	0.27	34	1.12
Twenty-first	37 864	463	12.25	536	12.48	521	13.71	69	1.82	105	2.44	124	3.20	15	0.39	11	0.26	33	0.85
Twenty-second	40 650	416	10.39	541	12.26	570	14.35	48	1.18	96	2.18	132	3.32	5	0.12	7	0.16	37	0.93
Twenty-third	49 739	582	11.32	682	13.38	790	17.22	79	1.59	181	3.55	235	5.12	17	0.36	19	0.37	52	1.13
Twenty-fourth	40 441	240	5.94	351	7.80	368	9.01	25	0.62	63	1.40	69	1.70	5	0.12	7	0.15	19	0.46
Twenty-fifth	35 969	388	10.80	428	12.70	400	13.18	72	2.01	109	3.23	105	3.46	14	0.39	13	0.39	24	0.78
Twenty-sixth	47 335	609	12.87	709	17.33	680	18.47	109	2.30	215	5.26	167	4 53	12	0.25	21	0.51	31	0.92
Twenty-seventh	19 668	279	14.23	252	14.81	196	13.33	47	2.40	86	5.26	56	3.80	12	0.61	7	0.43	9	0.61
Twenty-eighth	18 287	231	12.85	237	16.87	238	18.82	37	2.03	70	4.98	76	6.01	4	0.22	2	0.14	8	0.63
Twenty-ninth	41 041	585	14.27	716	16.86	628	16.43	88	2.14	206	4.85	161	4.25	14	0.34	17	0.40	21	0.55
hirtieth	84 662	1197	14.15	1406	20.33	1265	18.12	205	2.42	428	6.19	382	5 51	25	0.29	28	0.40	48	0.69
Thirty-first	39 873	509	12.99	627	16.33	443	12.82	70	1.73	198	4.97	128	3.70	12	0.30	14	0.36	16	0.46
Thirty-second	45 801	437	9.10	531	12.52	456	11.87	48	1.05	121	2.84	116	3.02	9	0.19	13	0.30	18	0.46
TThirty-third	34 420	529	15.38	761	17.91	683	17.88	60	1.74	201	4.81	214	5.60	11	0.40	20	0.47	24	0.63
Thirty-fourth	57 362	704	12.28	699	13.70	607	13.20	139	2.46	211	4.14	174	3.78	17	0.31	20	0.39	25	0.54
Public Institutions	....	2853	......	2417	......	2375	......	905	......	337	......	453	......	105	......	142	......	355	......
Violence	....	1653	......	1971	......	1573	......	......	......	......	......	......	......	.....	......	......	......	......	......
Total	1 567 727	23892	15.24	27083	16.93	26219	18.23	3850	0.24	6303	3.94	6275	2.39	492	0.31	670	0.42	1489	1.02

XXV. POPULATION, DEATHS AND DEATH RATES, BY YEARS: 1843–1894, INCLUSIVE.

YEARS.	Population.	Number of deaths.	Number of deaths in 1000 of population.
1894	1 567 727	23 892	15.24
1893	1 600 000	27 083	16.92
1892	1 438 010	26 219	18.23
1891	1 250 000	27 754	22.20
1890	1 208 669	21 869	18.09
1889	935 000	16 946	17.56
1888	802 651	15 772	19.65
1887	760 000	15 409	20.27
1886	703 715	13 699	19.42
1885	665 000	12 474	18.76
1884	629 885	12 471	19.80
1883	580 000	11 555	19.92
1882	560 693	13 234	23.60
1881	540 000	13 874	25.60
1880	503 298	10 462	20.79
1879	491 516	8 614	17.52
1878	436 731	7 422	16.99
1877	430 000	8 026	18.68
1876	407 661	8 573	21.02
1875	400 500	7 899	19.72
1874	395 408	8 075	20.29
1873	380 000	9 557	25.16
1872	367 396	10 156	27.67
1871	334 270	6 976	20.87
1870	306 605	7 323	23.88
1869	280 000	6 488	23.10
1868	252 054	5 984	23.70
1867	225 000	4 648	21.10
1866	200 418	5 931	32.20
1865	178 492	3 663	22.50
1864	169 353	4 448	26.26
1863	150 000	3 885	25.80
1862	138 186	2 835	20.51
1861	120 000	2 279	18.90
1860	109 206	2 264	20.70
1859	93 000	2 008	21.30
1858	90 000	2 225	24.72
1857	87 600	2 414	27.55
1856	84 113	2 086	24.80
1855	80 023	2 181	27.20
1854	65 872	4 217	64.00
1853	59 130	1 325	22.40
1852	38 734	1 809	46.70
1851	34 000	927	36.60
1850	29 963	1 467	48.90
1849	23 047	1 701	73.80
1848	20 023	638	31.80
1847	16 859	572	33.90
1846	14 169	394	27.80
1845	12 088	344	28.40
1844	10 170	336	33.00
1843	7 580	141	18.60

NOTE.—The figures of population in this table are those of the United States Census for the years 1850, 1860, 1870 and 1880; of the State Census for 1845, 1855 and 1865; of the City Census for the years 1843, 1846, 1847, 1848, 1849, 1853, 1856 and 1862; of the Official Census under the School Law for every even-numbered year thereafter. For the intermediate (odd-numbered) years the population is estimated. Except for the year 1893 the estimated population of each intermediate year has been fully sustained by the Official Census of the next succeeding year; the exception was due to the exceptional increase of population during the World's Fair year, not all of which was added to the permanent population.

METEOROLOGICAL FEATURES OF THE YEAR 1894.

The mean temperature of 1894 was 50°, being 4° higher than the mean temperature of 1893. The highest temperature, 96°, occurred July 24th; lowest, 9° below zero, on January 25th, being a range of 105°. Rain or snow fell upon 107 days to the amount of 27.46 inches. During the preceding year 27.47 inches fell. The greatest atmospheric pressure, 30.85 inches, occurred on February 24th; the least, 29.26 inches, on February 9th, being a range of 1.59 inches; the mean was 30.04. The mean relative humidity was 71 per cent.

During the Winter Quarter—January 1 to March 31—there were registered 5130 deaths from all causes, being an annual death rate of 13.08 per thousand of population. The mean temperature of the quarter was 31°; highest temperature was 74°, on March 17th; lowest, 9° below zero. on January 25th; range 83°. Mean reading of barometer, 30.08; highest, 30.85 inches, on February 24th; lowest, 29.26, on February 9th; range, 1.59 inches. Mean relative humidity, 78 per cent. Rain or snow fell on 26 days, to the amount of 6.34 inches.

The mean temperature of January was 28°; highest temperature 60°, on the 17th; lowest 9° below zero, on the 25th; range 69°. Rain or snow fell on 8 days, to the amount of 1.55 inches. Prevailing direction of wind, southwest. Mean reading of barometer, 30.09 inches; highest, 30.66 on the 25th, and lowest 29.49 on the 20th; monthly range, 1.18 inches, The mean relative humidity was 81 per cent.

The mean temperature of February was 23°; highest temperature 48° on the 27th; lowest 4° below zero on the 21st, range 52°. Rain or snow fell on 8 days, to the amount of 2.13 inches. Prevailing direction of wind. southwest. Mean reading of barometer. 30.14 inches; highest, 30.85, on the 24th; lowest, 29.26, on the 9th: range, 1.58 inches. The mean relative humidity was 80 per cent.

Mean temperature for March was 41°; highest temperature, 74°, on 17th; lowest, 9°, on the 26th; range, 65°. Rain or snow fell on 10 days, to the amount of 2.66 inches. Prevailing direction of wind, southwest. Mean reading of barometer, 30.01 inches; highest, 30.49, on the 27th; lowest, 29.52, on 10th; range 0.97. inches. Mean relative humidity was 74 per cent.

During the Spring Quarter—April 1 to June 30—there were registered 6302 deaths from all causes, being an annual death rate of 16.08 per thousand of population. The mean temperatnre of the quarter was 58°; highest, 93°, on June 22nd: lowest, 31°, on April 9th; range, 62°. Mean reading of barometer, 29.98 inches; highest, 30.40, on May 11th; lowest, 29.49, on May 17th; range, 0.91 inches. Mean relative humidity, 68 per cent. Rain fell on 34 days, to the amount of 7.96 inches.

The mean temperature of April was 47°; highest temperature, 84°, on 30th; lowest, 31°, on the 9th; range, 53°. Rain or snow fell 12 days, to the amount of 2.65 inches. Prevailing direction of wind, northeast. Mean reading of barometer, 30.02 inches; highest, 30.32, on the 2nd; lowest, 29.58, on the 10th; range, 0.74 inches. Mean relative humidity, 72 per cent.

The mean temperature of May was 56°; highest temperature, 88°, on the 16th; lowest, 35°, on the 18th; range, 53°. Rain fell on 13 days to the amount of 3.35 inches. Prevailing direction of wind, northeast. Mean reading of barometer, 29.95 inches; highest, 30.40, on the 11th; lowest, 29.49, on the 17th; range, 0.91. Mean relative humidity, 72.1 per cent.

The mean temperature of June was 71°; highest temperature, 93°, on the 22nd; lowest, 40°, on the 6th; range, 53°. Rain fell on 9 days, to the amount of 1.96 inches. Prevailing direction of wind, southwest. Mean reading of barometer, 29.98; highest, 30.24, on the 11th; lowest, 29.71, on the 2nd; range, 0.54 inches. Mean relative humidity, 60°.

During the Summer Quarter—July 1 to September 30—there were registered 7130 deaths from all causes, being an annual death rate of 18.20 per thousand of population. The mean temperature of the quarter was 70°; highest temperature was 96°, on July 24th; lowest, 44°, on September 24th; range, 52°. Mean reading of barometer, 30.02 inches; highest barometer was 30.46, on September 25th; lowest, 29.72 inches, on September 22nd; range, 0.74 of an inch. Mean relative humidity, 63 per cent. Rain fell on 18 days, to the amount of 9.48 inches.

The mean temperature of July was 73°; highest temperature, 96°, on the 24th; lowest, 54°, on the 7th; range, 42°. Rain fell on two days, to the amount of 0.60 inches. Prevailing direction of wind, northeast. Mean reading of barometer, 30.01 inches; highest barometer, 30.20 on the 9th; lowest, 29.78, on the 24th; range, 0.42 of an inch. Mean relative humidity, 56 per cent.

The mean temperature of August was 71°; highest temperature, 95°, on the 8th; lowest, 48°, on the 3rd; range, 47°. Rain fell on five days, to the amount of 0.60 inches. Prevailing direction of wind, northeast. Mean reading of barometer, 30.03 inches; highest, 30.25, on the 5th; lowest, 29.78 on the 1st; range, 0.47 of an inch. Mean relative humidity was 64 per cent.

Mean temperature of September was 66°; highest temperature, 90°, on 2nd; lowest, 44°, on the 24th; range, 46°. Rain fell on 11 days, to the amount of 8.28 inches. Prevailing direction of wind, south. Mean reading of barometer, 30.03 inches; highest barometer, 30.46 on the 25th; lowest, 29.72, on the 22nd; range, 0.73 of an inch. Mean relative humidity, 69 per cent.

During the Autumn Quarter—October 1 to December 31—there were registered 5330 deaths from all causes, being an annual death rate of 13.60 per thousand of population. The mean temperature of the quarter was 39°; highest temperature was 76°, on October 16th; lowest, 3° below zero, on December 28th; range, 79°. Mean reading of barometer, 30.05 inches; highest, 30.71, on November 28th; lowest, 29.43, on December 16th; range, 1.28 inches. Mean relative humidity, 74 per cent. Rain or snow fell on 29 days, to the amount of 3.68 inches.

The mean temperature for October was 52°; highest temperature, 76°, on 16th; lowest 32°, on 14th; range, 44°. Rain fell on 11 days, to the amount of 0.84 inches. Mean barometer reading, 29.94 inches; highest barometer, 30.28 on the 24th; lowest 29.59, on the 3rd; range, 0.69 inches. Mean relative humidity, 71 per cent. Prevailing wind, south.

The mean temperature of November was 34°; highest temperature, 60°, on the 15th; lowest, 10°, on the 19th; range, 50°. Rain or snow fell on 9 days, to the amount of 1.18 inches. Mean reading of barometer, 30.09 inches; highest barometer, 30.71, on the 28th; lowest, 29.54, on 15th; range, 1.17 inches. Mean relative humidity, 72 per cent. Prevailing wind, northwest.

The mean temperature of December was 32°; highest temperature, 55°, on the 21st; lowest, 3° below zero, on the 28th; range, 58°. Rain or snow fell on 9 days, to the amount of 1.66 inches. Prevailing wind, southwest. Mean reading of barometer, 30.11 inches; highest barometer, 30.53, on the 17th; lowest, 29.43, on the 16th; range, 1.102. Mean relative humidity, 78 per cent.

REPORTS

OF

Divisions and Bureaus

Reports of the Division of Contagious Diseases.

E. GARROTT, M. D., *Chief Medical Inspector.*

Since I had the honor, as Chief Medical Inspector, of submitting to the Commissioner of Health my last annual report, the city has passed through a severe epidemic of smallpox, interesting to us from three points of view: First, as to etiological factors; Second, as to possibilities; and Third, as to the value of general immunization.

As pointed out in my report for 1893 the exciting and contributory etiological factors were favorable to a violent epidemic. First, in the exceptionally virulent character of the virus (probably imported from the Orient); and then in the great influx of people to the city consequent upon the Columbian Exposition. This latter, in conjunction with the general business depression and consequent desire to reduce expenses, caused over-crowding, which was most marked in the tenement and lodging-house districts. The congestion of these localities became a potent causative element in spreading the disease, by affording the greatest possible area of good soil for the growth of the seed. Ordinarily when a case of smallpox occurs, only a few persons, members of the family, are exposed, and these are easily quarantined and can be vaccinated and watched until all danger has passed. But under the conditions existing as above described, the case would be quite different. Now a focus appearing, many people are infected and these, under the influence of terror or dread, will sometimes run to and fro, hither and thither, scattering contagion in their flight. Unfortunately, a large majority of these individuals would be unprotected, and therefore constituting excellent inflammable material, new fires would be constantly springing up near and far.

Recognizing the necessity of prompt and active defense, the Commissioner at once increased the number of the Medical Inspectors and established a corps of five hundred vaccinators, a number amply sufficient to cover the territory in which they had to labor; and so thoroughly was this work done that the most unsanitary and over-crowded districts were finally rendered the most free from smallpox. As an example—in one of the West Side districts, with a population of 70,000, within two months 63,000 were successfully vaccinated, and although this district was almost completely saturated with contagion, and although numerous cases had occurred within its limits, yet after the vaccinators had once gone over the field, five months of perfect freedom from the disease ensued, and the only case which then appeared was that of a babe nineteen days old which had not yet been vaccinated.

For the previous eight or ten years it was quite an easy task to prevent a smallpox outbreak. Now and then an isolated case would be found, and then the quarantining of infected individuals, careful vaccination of those exposed and the prompt disinfection or destruction of all contagion-bearing matters, were all that would be necessary. But in 1893, when numerous foci of the poison were simultaneously appearing all throughout the city, and when its potency was causing the disease to assume the most malignant type, far different measures were required. That the Department met the exigencies of the occasion is demonstrated by the fact that at no time after the epidemic had once started did the enemy gain a victory; but steadily and surely each section of the city was attended to, each fastness was invaded and the foe dislodged, until at last isolated cases here and there were the only ones occurring.

The work of vaccinating the city was a difficult one. We had to encounter and overcome carelessness, ignorant and superstitious prejudice, and in some of the foreign settlements, where for block after block hardly a word of the English language would be heard, it seemed almost as if the task were an insurmountable one. But good-natured persistence and kindly perseverance conquered, and after our vaccinators had been at work in some of these above-mentioned sections, one might traverse the length and breadth of the district without finding a single unprotected person.

The Department has been very careful concerning the vaccine virus used, selecting only such as was found to be pure beyond the peradventure of a doubt. It is to be hoped that before long vaccine farms will be operated by the State, so that a continuous supply of uncontaminated virus will be assured. I understand the State Board of Health has recommended such a measure to the Legislature.

The number of vaccinations performed in one month, May, 1894, far exceeded the entire aggregate of the preceding ten years. The following Exhibit, A, shows the number of vaccinations per month for the year 1894, and Exhibit B shows the number per year for the previous five years.

EXHIBIT A.

NUMBER OF VACCINATIONS PER MONTH DURING THE YEAR ENDED DECEMBER 31, 1894.

January	88 000
February	39 000
March	37 000

April	81 500
May	586 500
June	88 000
July	10 000
August	11 000
September	37 000
October	29 000
November	37 000
December	40 000

EXHIBIT B.

NUMBER OF VACCINATIONS PERFORMED PER YEAR FROM 1890 TO 1894, INCLUSIVE.

During 1890	19 277
During 1891	18 750
During 1892	22 620
During 1893	110 820
During 1894	1 084 500

In the public schools of our city there are 185 358 children, and 61 224 in the various parochial schools. These schools have all been repeatedly visited by our Medical Inspectors, and the benefits of immunization extended to the unprotected.

But with all the labor that has been performed, there are still thousands of people that we have as yet been unable to reach, as must necessarily be the case in a city of nearly two million inhabitants, and with as large a floating population as has Chicago. Although the disease has practically been subdued, a reduced force of vaccinators is now making a house-to-house canvass in those portions of the city wherein experience has taught us the necessity, urging those not yet vaccinated to submit to the operation and endeavoring to overcome their prejudices.

The influence of the pulpit has been of inestimable value to us. In districts where we had the co-operation of the clergy, we have been enabled to rapidly arrest the progress of the pest, while directly across the boundary line in a section perhaps with better sanitary surroundings, but where we had not been allowed to carry on free and general vaccination, the sufferings from the ravages of smallpox have been intense. In one of these latter localities we found it at first almost impossible to protect the people, who resisted our every effort, and on our appealing to their advisors, we encountered either silent or open and active opposition. When, however, these gentlemen saw the results of vaccination in adjoining districts, and when we pointed out to them the responsibility of so many deaths resting upon them, they became convinced of the correctness of our position and gave us every possible aid, with the most gratifying results.

I would call attention to certain facts of interest that have come to my notice. Owing to the peculiar characteristics of the skin of the negro, the positive diagnosis of the exanthemata is especially difficult, and requires a longer period of time of observation than in the white-skinned races. It has, therefore, been the custom of the Department to quarantine all suspicious cases among the colored people, and watch them with excessive care until such time as a diagnosis could be established.

I have also to refer to a point which I consider to be of considerable clinical importance. In any case of smallpox, early in the case, before the papules have made their appearance, and previous to the time when papules can be discovered in the throat, I have frequently made a positive diagnosis (which subsequent development has verified) by recognizing at this stage well marked papules and even vesicles, in the vulva of the female, or in the urethra, near the meatus urinarius, of the male.

There is no doubt in my mind as to the fatality of variola in its purpuric hemorrhagic form. During the quarter of a century of my experience in connection with smallpox, I have seen over one hundred and fifty cases of this variety of the disease, every one of which died. In ordinary discrete smallpox, and occasionally in confluent variola, in the early history of the case a hemorrhage from the bowels is not regarded by me as being an unfavorable symptom. At first it was so looked upon by me, but I have learned that it very often exerts a favorable influence upon the course of the malady. This is only when the hemorrhage takes place early in the history of the case, and not when it occurs late. I would also touch upon the fact that malignant smallpox is capable of distributing contagion much earlier than any other variety, and I believe this form is highly contagious even before the appearance of the rash.

The period of incubation of smallpox being from twelve to fourteen days, on an average, and that of vaccinia from four to five days, it may be readily seen that a person can be vaccinated seven or eight days after having been exposed to smallpox, and still have a perfectly developed vaccinal vesicle at the onset of an attack of variola. But after so many days have elapsed it is very doubtful whether vaccination will modify the severity of the attack. However, under five days, experience warrants me in saying that vaccination does modify smallpox. In the cases which have come under my observation the results have been variable. In some there seemed to be no modifying influence whatever, while in others modification unquestionably resulted. Of the former class, or where vaccination had been performed after the fifth day of the period of incubation, I recall one special case. A child, three years old, died of smallpox, after a vaccination had progressed typically, to all appearances, for five or six days, with a vaccination area as large as a quarter of a dollar.

It is, as a rule, quite difficult to get vaccination to "take" on nursing babies, and these resist smallpox for a short period of time; but it is our duty to revaccinate until typical results are obtained, and such results can always be obtained by perseverance.

The following cases seem to demonstrate the peculiar phenomena to which I have referred:

Case I.—A woman was confined, and on the day following confinement a smallpox eruption appeared, the malady terminating fatally on the seventh day of the eruption. The infant was vaccinated immediately after birth, the operation "taking" typically on both arms, but smallpox developed on the seventh day. Since before the appearance of the smallpox eruption, typical vaccine vesicles could be demonstrated on each arm, the child, therefore, must have contracted the variola five or six days before the termination of its intra-uterine existence. It died on the twelfth day after birth.

Case II.—A woman was confined during the prodromal stage of smallpox, and on the following day the eruption appeared. The child was vaccinated at once, and again on the fifth day, when it "took" typically, the child escaping the disease. The mother recovered.

Case III.—A mother developed varioloid and was removed to the Municipal Isolation Hospital on the fifth day of the eruption. Her little daughter, six years of age, was at once vaccinated, and the operation gave evidence of a typical, successful result on the fourth day following, continuing to progress to the seventh day, showing a classical vesiculation and giving us hopes of protection. But by the ninth day the child came down with the confluent form of smallpox and died a week later.

Case IV.—A child nine years old, concealed from the authorities, had smallpox in the confluent form. The case had progressed to the stage of incrustation, when its mother was confined in the same room, filled as it was with the concentrated poison. The babe was vaccinated nine hours after birth, and revaccinated every third day, until after six fruitless attempts the much desired result was obtained. This child escaped the disease, although three other children who were not discovered early enough contracted variola, one of them dying. Had there not been a certain amount of natural immunity in the newly-born babe, it would most positively have suffered from smallpox.

Case V.—A child nine days of age was vaccinated, being in the same apartment with its mother and sister, both of whom were suffering from smallpox. It was vaccinated every third day, until the vaccination "took" classically, and inhibited variola, although the little one was all the time in the same room with two cases of smallpox running a typical course, the family being quarantined.

Case VI.—A child, whose father was daily exposed to smallpox on account of his professional duties, was unsuccessfully vaccinated by him some ten or twelve times. I was appealed to, and after six weekly trials, followed by as many failures, at last a typical vaccine sore was produced.

Too much stress can not be laid on the fact that kind persuasion is the only measure that can be used in inducing the sick to consent to removal from their homes. Where force is shown many will adopt more and more cunning means to hide their afflicted ones, and prevent the discovery of the stricken. But just as soon as the medical sanitarian can obtain the confidence of those with whom he has to deal, and can make them believe he is acting entirely for their own good and their interests, then will he encounter but little or no opposition to the carrying out of correct hygienic and sanitary measures.

In concluding this report I beg leave to bear testimony to the efficacy of the work of the vaccinating corps and to the faithful attention they have given to instructions. I would also pay a high compliment to the skill and ability demonstrated by the staff of diagnosticians in differentiating between smallpox and the various pathological conditions from which it is excessively difficult to distinguish it. I am very glad to notice the absence of all "authoritative" tendencies on the part of the gentlemen constituting the staff, all of whom seem to be actuated by that spirit of gentleness which should characterize every medical official in dealing with the sick and distressed.

It is the old story of the contest between the North Wind and the Sun as to which could induce a traveller to remove his cloak. Blustering Boreas failed and but made the wayfarer draw all the more tightly his mantle around him, while genial Phœbus-Apollo caused it to be thrown aside.

751 WASHINGTON BOULEVARD,
JANUARY 1, 1895.

A DETAIL OF VACCINATION WORK.

BY THE CHIEF MEDICAL INSPECTOR.

The spread of smallpox during the early months of 1894 was rapid and general, owing to the congested condition of the lodging-house and tenement districts of the city by thousands out of employment, to the concealment of cases and inadequate hospital facilities—both of which conditions caused a wide diffusion of the contagion—and owing especially to many years' neglect of vaccination, which had resulted in an enormous aggregation of "susceptibles." The Commissioner therefore decided upon a wholesale vaccination of the population, and the city was accordingly divided into districts, and vaccinators were employed as rapidly as qualified men could be found and reliable vaccine procured. This last essential caused some delay in prosecuting the work on the broad scale deemed to be necessary, and, although free vaccinations were begun on the appearance of the first cases in 1893, it was not until April, 1894, that an adequate supply of satisfactory vaccine was available, or authority for its purchase and for the employment of the necessary force of vaccinators was obtained.

Meantime a smallpox "storm centre" had developed in the area west of the south branch of the river and north of Twenty-second street—a portion of the first of the four principal districts into which the city had been divided. The Commissioner created this area a special district on April 15th, and the Chief Medical Inspector assumed direct supervision of it April 21st.

The boundaries of this special district were—Chicago avenue on the north; Twenty-second street on the south; the north and south branches of the Chicago river on the east; and, at first, Halsted street on the west—subsequently extended to Morgan street. The population of the area as first outlined was 70 754, living in 3487 houses and premises; the total population of the enlarged area was 83 792. In this area a total of 24 828 domiciliary visits were made by the inspectors and vaccinators, and 57 910 free vaccinations and revaccinations were performed. Of the population—70 754—examined between April 21 and June 5, only 12 786, or about 18 per cent, were found to be satisfactorily vaccinated during the first visits. During the first period 5859 persons refused to submit to vaccination, but 1218 of these agreed to be vaccinated by their family physicians; during the later period there were still found 824 persons who positively refused to be vaccinated.

At the close of the period tabulated 73 239 persons, or 87.4 per cent. of the total population, were accounted for as satisfactorily vaccinated; 9246 were returned "not found," 824 refusing, and 483 promising to be vaccinated by private physicians.

There were 122 cases of smallpox isolated in this district during the period covered by the work; the remainder being removed to the Municipal Hospital. In no instance was force resorted to in removing cases; reason, kindness and persuasion accomplishing the result desired. Houses were fumigated twice and infected clothing and beds burned. Members of families and others exposed were given a bichloride bath, and those unprotected were vaccinated, and these were visited and revaccinated every fourth day until it had taken with typical result. Houses were placarded and surveillance maintained for fourteen days after the appearance of the last "suspect."

A corps of vaccinators worked around infected spots, thus affording a double protection. The vaccinators worked two together, finishing a block at a time. If a person refused to be vaccinated a note was made of the fact, taking the name and address, and another vaccinator visited and revisited the subject until he consented to vaccination. Nothing was accepted but a typical mark less than three years old.

The sub-districts were defined and fairly equipped with vaccinators by April 21, and before the close of the month the work was well in hand. The subjoined exhibit sufficiently indicates the scope and thoroughness of the work, and it is only necessary to say that no case of smallpox occurred in this area after the work was completed during the remainder of the year.

The exhibit is divided into periods—A, that between April 21 and June 5, during which every effort was made to cover as much ground and to secure as many vaccinations as speedily as possible; B, that between June 6 and July 22, at which latter date the work was substantially completed, and during which period the ground was gone over again and again, and it was found practicable to make a tolerably complete enumeration of the results.

Exhibit of Vaccination Work in a Special Smallpox District, under Direct Supervision of Chief Medical Inspector Garrott; April—July inclusive. 1894.

A—PERIOD BETWEEN APRIL 21 AND JUNE 5.

SUB-DISTRICTS.				No. of vaccinators employed.	No. of premises visited once or oftener.	OCCUPANTS.				
Number.	BOUNDARIES.	Population.	Houses and premises.			No. found satisfactorily vaccinated.	No. vaccinated during visits.	No. refusing vaccination.	No. not found during visits.	No. sent to family physician.
1	Twenty-second to Sixteenth streets	10355	916	5	2485	1879	6948	565	783	180
2	Sixteenth to Fourteenth streets	5174	451	4	1160	873	3150	490	535	126
3	Fourteenth to Twelfth streets	10960	978	4	2674	2553	6877	652	710	168
4	Twelfth to Forquer streets	3342	306	4	875	327	2375	298	298	44
5	Forquer to Polk streets	10998	965	3	2555	2925	6709	540	666	158
6	Polk to Van Buren streets	7786	780	2	1920	1183	5505	485	498	115
7	Van Buren to Monroe streets	2414	212	3	500	232	1643	212	255	72
8	Monroe to Washington streets	5863	543	3	1414	896	4092	385	430	60
9	Washington to Randolph streets	3188	282	2	710	282	2365	210	286	45
10	Randolph to Lake streets	2854	265	3	684	315	1925	284	258	72
11	Lake to Carroll streets	3912	383	2	975	211	3012	298	300	91
12	Carroll street to Chicago avenue	3908	406	2	960	510	2787	222	302	87
	Totals	70754	6487	37	16812	12186	47388	4641	5321	1218

B—PERIOD ENDED JULY 21, 1894, BY WEEKS.

WEEK ENDED	Subdistrict No.	No. of vaccinators employed.	No. of premises visited once or oftener.	Number of occupants.	OCCUPANTS.				
					No. found satisfactorily vaccinated.	No. vaccinated during visits.	No. refusing vaccination.	No. not found.	No. sent to family physician.
June 9	1	4	351	2440	1430	490	103	390	27
	2	4	166	1873	1370	216	14	268	5
	3	4	193	2309	1598	337	13	353	8
	4	4	197	2521	2067	202	5	213	4
	5	2	38	780	559	43	5	170	3
	6	2	84	1099	442	503	9	140	5
	7	3	95	1076	661	246	17	134	18
	8	3	125	1625	1365	142	9	102	7
	9	3	132	2639	1823	534	117	162	3
	10	3	92	682	428	232	10	12	......
	11	2	91	443	414	379	38	12	......
	12	2	84	798	667	61	32	28	10
June 16	1	4	323	2348	1900	148	38	257	5
	2	4	180	2588	2130	149	16	292	1
	3	4	211	2712	2096	201	15	393	7
	4	4	211	2329	1923	126	7	273	......
	5	2	80	1198	1047	41	......	110	......
	6	2	104	920	701	43	5	170	1
	7	3	175	1556	1094	340	11	111	......
	8	3	224	2722	2365	248	10	88	11
	9	3	159	2327	1942	163	14	200	8
	10	3	124	1293	791	427	26	49	......
	11	2	122	1236	1180	52	1	3	......
	12	2	195	1616	1440	85	31	51	9
June 23	1	2	152	2135	1200	37	8	870	20
	2	2	168	2590	2322	145	32	91	......
	3	2	81	1096	973	51	13	59	......
	4	2	60	953	477	162	30	277	7
	5	2	187	1731	1391	239	12	89	......
	6	2	164	745	527	170	10	38	......
	7	2	170	2422	2185	180	10	47	......
	8	2	230	1904	1598	227	9	66	4
June 30	1	2	47	662	399	4	1	251	7
	2	2	148	2064	1094	644	......	26	......
	3	1	69	530	270	189	30	41	......
	4	1	92	1369	729	85	5	548	2
	5	1	59	504	317	124	6	57	......
July 7	1	2	10	207	141	18	18	30	......
	3	1	105	1108	892	176	2	38	......
	4	1	94	811	613	159	16	23	......
	5	1	73	539	322	112	126	78	1
	6	1	121	1982	1069	79	2	828	4
July 14	1	2	170	2126	1977	121	2	......	26
	2	2	207	2149	1708	199	10	157	75
	3	1	50	1025	580	198	......	247	......
	4	1	144	1164	932	149	7	66	10
	5	1	100	1017	731	145	11	87	43
	7	2	215	3119	1792	317	11	980	19
July 21	1	2	176	2192	2019	173	......	......	......
	2	2	261	2297	1779	278	7	174	59
	3	1	79	938	498	291	......	149	......
	4	1	122	1001	727	159	......	......	115
	6	2	101	1873	1033	333	......	503	4

Of the 9246 "not found" during the visits between June 9 and July 21, as above shown, the vaccinators' records show 7321 "found satisfactorily vaccinated" on previous visits, thus increasing the proportion of vaccinally protected to about 96 per cent. of the total population of this special district.

Observations on the Smallpox Epidemic of 1894.

BY JOHN A. BENSON, M.D., CHAUNCEY F. CHAPMAN, M.D.,
Medical Inspectors.

The following report, concerning the smallpox epidemic of 1894, in connection with the district put in our charge by the Commissioner of Health, is respectfully submitted:

This district extended from Sixteenth street on the south, north to North avenue; from the west side of Halsted street on the east, west to the city limits, and contained approximately 250 000 people, being about the size of the city of Omaha. Acting under the Commissioner's orders we subdivided this district into twenty-one subdistricts, placing a chief vaccinator in charge of each subdistrict, with assistants working under his direction—the number of assistants in the different divisions varying according to the density of the population. In this manner 100 vaccinators were kept at work conducting a house-to-house vaccination campaign up to the 1st of August, when the force was disbanded. In certain subdistricts, previous to August 1, vaccinators were occasionally dropped as their work was accomplished. During this time 230 000 persons were vaccinated and revaccinated, necessitating the use of about 400 000 vaccine points—for the greater part of the month of June our daily average exceeding 7000 points.

The duties devolving upon us were the supervision of the vaccination work, the diagnosing of smallpox, its differentiation from other diseases, the removal of the patients and the cleansing of infected localities.

On account of the over-crowded condition of the City Quarantine Hospital in the early part of the epidemic, we were obliged to isolate and treat many cases at their own homes. In this way we had ample opportunity to carefully study the various forms seen by us, and in families wherein we were treating cases, and others developed the disease, we were enabled to watch the earliest prodromal symptoms.

We divide our report as follows: First, the clinical aspects of smallpox as seen by us in this epidemic. Second, the management and treatment of the disease. Third, observations with respect to vaccination.

First—Smallpox manifested itself to us, and was studied by us under the following forms: *a*, modified small-pox or varioloid; *b*, true smallpox, discrete and confluent; *c*, petechial hemorrhagic smallpox (purpura variolosa); *d*, pustular hemorrhagic smallpox (variola hemorrhagica pustulosa); *e*, hemorrhagic abortive smallpox. One of the first things we noticed was the number of cases of malignant smallpox that occurred. Those affected exhibited the symptoms of hemorrhagic petechial smallpox, or the symptoms of the pustular hemorrhagic variety, this latter being the confluent form of true variola with a hemorrhagic tendency. The petechial exhibit of hemorrhagic variola is difficult to diagnose in its early stages on account of its strong resemblance to measles. As in this last mentioned disorder, so in the disease under consideration, we have seen in these patients coryza, sneezing, running at the nose and eyes, redness of the eyes and lids with photophobia and soon a cough developed. Examination of the throat revealed pretty much the same hyperemic state that is noticed early in measles, but while in measles this condition may extend to the entire mucous lining of the mouth with the exception of the tongue, in purpura variolosa the tongue is early affected. We have seen 30 cases of this variety; of these 25 were males and 5 were females. Of the males 15 were between 20 and 30 years of age, 6 were between 15 and 20, and 4 were above 30 years old, one of these latter being between 50 and 60. Among the 5 females the ages ranged between the limits of 25 and 40 years. Of these individuals 50 per centum were unvaccinated, while of the remaining 50 per centum, with a history of vaccination in infancy or early life, none had been revaccinated.

In the study of these cases we made note of three peculiar facts: First, that the disease attacked mainly strong, well-developed, muscular and previously healthy young men; Second, that while the constitutional disturbances were severe, while the evidences of toxication were pronounced, the prodromes were not subjectively so intense as in variola vera; and Third, that the mental field would remain quite clear even to the very end. The invasion was in all cases abrupt; a rigor or a quick succession of rigors, a febrile movement, general and sudden loss of strength; headache, lumbar pains extending down the legs, vomiting, and the "measles" symptoms before noted. In none of the cases wherein we watched the temperature did the curve pass above the 103° mark, while in severe forms of variola vera discreta just previous to the appearance of the eruption we have seen the mercury column rise to 105° and even 106°. In 75 per centum the eruption appeared on the second day, in the remainder on the third. In 70 per centum death occurred between the third and the sixth day, the earliest one being on the morning of the third day, when the eruption was just appearing. The pulse was usually small and rapid, and the "Osler" symptom was present in all the cases, and was exhibited early in the disease, even during the prodromal period. This symptom is a marked and pronounced acceleration of the respiratory movements, out of all proportion to the intensity of the thermic disturbance, or any extra-physiological condition of the lungs. The number of the respiratory movements to the minute ranged between 30 and 35. In all of these cases the tongue was found swollen to a greater or lesser degree, and this condition as a rule became quite pronounced as the eruption developed. In a large majority of these cases the eruption appeared first on the belly and then rapidly extended toward the head and feet, until in some instances every inch of the skin of the body would be affected. Early in its appearance the rash is of a dirty-red color and is an intense congestion, pressure producing a light spot which however immediately disappears as the pressure is removed. At this time small hemorrhagic spots appear here and there, bluish in color like little stains of India ink, and they show well on the reddish background. This state quickly passes into a condition of endermic hemorrhage, the skin darkens in color, becomes purple and later a dark-plum color. A peculiarity of this form of the disease is that many of these cases were absolutely non-vesicular. Not a single vesicle could be found on any part of the body after careful examination, and this in cases that lived to and beyond the sixth day. In a minority of the cases a few vesicles were noted, scattered here and there, and in other cases quite a crop would be seen. A general symptom noted was the establishment of an acute hemophilic diathesis, a general hemorrhagic state. Ecchymotic spots would appear on the conjunctivæ and might coalesce until the "white" of the eye would disappear entirely. Hemorrhages from mucous surfaces occurred in all the cases; thus we have noticed epistaxis, buccal hemorrhages, hematemesis, hemoptysis, hematuria and bleeding from the bowels. Metrorrhagia was seen in only one of the five females of our cases, and in one of the male cases there was a marked blood flow from the meatus urinarius.

The toxic material circulating in the patient's blood produces a marked effect on the discoid corpuscular elements, through some change induced in the hemoglobin. The oxygen-carrying and surrendering powers of this body are reduced. Before the eruption appears at all, the lips, the palpebral conjunctivæ and the buccal mucosa all appear more or less bluish, or cyanosed, such an appearance as is noticed in those individuals in whom excessive use of the coal-tar products has produced a methemoglobinoid state. We believe that following this the relations between the œcoid or stroma of the discoid corpuscles and the zoöid or contained coloring matter, are disturbed, and that the zoöid may undergo solution in the plasma sanguinis. There may be a true hemocytolysis, or perhaps as previously indicated a divorcement between the œcoid and the zoöid. In one case, that of a young man whom we saw in the initiatory prodromal stage as the eruption was developing, examination of his urine revealed at first the existence of hemoglobinuria, and later of a true hematuria. A description of two of the severest cases we have seen might prove of interest:

The first, a finely built strong young man of about 22 years of age, was seen by us in a lodging house, in a thickly settled portion of the city, on the evening of the third day of his illness and twelve hours before his death. He was lying in bed, his mind was unclouded, and he was able to sit up and to turn his body around so as to vary the positions to assist us in our examination. Every portion of his body, from the crown of his head to the soles of his feet, was completely covered by the purpuric rash. The skin envelope of his whole body was one enormous ecchymotic patch — here a dark purple hue, there a deep plum color. Even the ocular conjunctivæ were a dirty wine color. His face was swollen, his tongue enlarged and engorged, almost filling the buccal cavity and rendering it difficult for him to speak or swallow, his respirations were 34 to the minute, temperature 101°, and pulse weak and about 120. For some hours he had been having intermittent attacks of epistaxis; occasionally he would cough and spit up a quantity of dark blood, and on two occasions he had vomited up grumous coffee-ground-like matter; he frequently was obliged to urinate, when he would pass bloody water, and during the intervals between these acts blood would dribble from the orifice of his penis; from his bowels tarry matter had been quite often voided, mixed with more or less fairly clear blood; a sanious thick frothy fluid would appear at his lips when he tried to speak, would collect in his mouth, requiring him to eject it; and on turning down the lower eye-lids, a bloody watery ooze could be seen welling up out of the swollen palpebral mucous membrane.

The other was that of a strong, previously healthy man of about 35 years of age, living in a cottage, away out on the prairie, in the western outskirts of the city, who was seen by us on the morning of the third day of his illness, and just ten minutes before his death. In its general appearances this case resembled the one above described, but the condition of the tongue was much more severe. This man was sitting on the edge of his bed, his enormously swollen tongue projecting out between his lips, absolutely hanging out of his mouth, and literally dripping with blood, which the unfortunate man was collecting, along with a stream that was issuing from his nostrils, on a towel which he held beneath his chin.

We would here call attention to the fact that in the clinical picture outlined in all the cases seen by us, the "Osler" symptom, or that of rapid respiration, and the condition described by us as that of the more or less engorged and swollen tongue, were never absent. The prognosis in this form of smallpox is invariably bad, the disease is always fatal; all the cases seen by and studied by us died, our observation in this respect being borne out by the testimony of eminent authorities, and we feel safe in saying that we do not believe that any person suffering from malignant petechial hemorrhagic smallpox ever recovered. Where such cases of recovery are reported we are satisfied that there was a mistake in the diagnosis.

The second form of hemorrhagic smallpox is variola hemorrhagica pustulosa. This is really ordinary smallpox to which there has been superadded a pronounced hemophilic condition. In all of the cases of this form seen by us the disease assumed confluent characteristics. The patient has the prodromal, general and specific symptoms of severe true smallpox, and as the vesicular stage is merging into the pustular, or after maturation has been established, endermic hemorrhages occur and there may be bleeding from mucous surfaces. In one fatal case of this form we saw a young man absolutely exsanguinated by repeated and terrific attacks of hematemesis. Another hemorrhagic form we noticed was the hypostatic. In severe exhibitions of distinct variola and in confluent variola where the patient insists on getting out of bed and walking around, the lower half of his body may show the characteristics of hemorrhagic, while the upper half will demonstrate the appearances of ordinary variola. In some of the cases of the hemorrhagic forms of smallpox, in addition to the petechial condition and the flow from mucous membranes, we have remarked a transpiration of bloody liquid on the surface of the skin, constituting an hematidrosis, and hemorrhages from the pocks themselves. Pustules would rupture, and from their interior a reddish stream would flow. One very interesting case that came under our notice was that of a young child in a family wherein we had discovered a person suffering from smallpox. This child was subsequently taken down with the disease, and on the fifth day, as the vesicles developed, the base of eack pock became very red and the areola deepened in color. A slight hemorrhage took place into the pocks, then the eruption rapidly dried up and the patient went on to make a speedy recovery. This was a case of Osler's hemorrhagic abortive smallpox, and was the only case of its kind seen by us.

In another form the patient has been poisoned by variola virus of great intensity. The system, owing to a certain degree of natural or acquired immunity, does not succumb to the toxication sufficiently to give evidence of the symptomatological grouping of smallpox, but the potent toxic material produces a septic state, to which we would apply the name of "septicemia variolosa." We have seen several of these cases, and believe it would be of interest to describe one of them. A lady seventy-two years of age, who in early life had suffered from varioloid, nursed a son who had contracted a terrible case of fatal malignant smallpox. Two weeks after her son's death she experienced a chill, followed by a febrile movement accompanied by severe headache, pain in the back, and nausea and vomiting. The fever rapidly rose to 103.5° F., the pulse was quick and there was general prostration. The tongue was dry, "beefy red," the face was pallid and the respiratory movements were accelerated, reaching 25 to the minute while the patient would be in the recumbent posture. This condition persisted for about a week, when some improvement was manifested and the patient gradually went on to complete recovery. In this case not a single "spot" appeared on the skin or any visible mucous membrane of the body.

In this epidemic, in the cases in our district, initial rashes were very prevalent. They occurred in about 25 per centum of the total number. In 10 per centum of these the rash was scarlatiniform, in the remainder of the measles variety. In all of these, except one, the rash was limited to the trunk and the internal aspect of the thighs. In one case there was a diffused erysipelatous blush over the head and face, which, with a co-existent swelling of the soft tissues, strongly simulated erysipelas. In the majority of these cases the rash appeared some time on the second day of the illness, and in most of them it faded away more or less completely as the eruption appeared. These rashes were seen in one case of varioloid, in mild and severe cases of distinct smallpox and in the confluent form. In the milder cases the rash assumed the scarlatiniform aspect, in the severer ones the measles appearance was manifested, while the erysipelatoid flame above mentioned was in the developmental period of a violent attack of confluent variola which proved fatal.

There is no necessity of touching upon the clinical picture belonging to variola, modified or unmodified. This is generally known, but there were two peculiar cases which we would describe, and to which we would call your attention. One was that of a young lady who on a certain day was seized with a pronounced rigor followed by a febrile movement accompanied by intense headache and lancinating lumbar pains radiating through the loins. On the evening of the third day a papular rash was discovered on the forehead which rapidly extended over the face and neck, the pains being ameliorated slightly, but the fever remaining. On the following morning, the second day of the eruption and the fourth of the disease, she experienced another severe chill succeeded by an intensification of the pains and an accentuation of the thermic disturbance, when the papular rash appeared on the hands and soon covered the arms and forearms. The next morning, early, the third day of the eruption and the fifth of the disease, there was a repetition of the previous symptoms and an eruptive outbreak on the feet and legs which rapidly extended until the whole body was covered.

Another interesting instance was that of a young bartender with a fair vaccinal history, who had been exposed to variola contagion. A fortnight after this exposure he was taken down with all the classical prodromal symptoms of smallpox. On the fourth day of his sickness there appeared a papular eruption on his forehead, then on his face, and then on his hands and wrists. As the rash materialized there was the general amelioration of all his symptoms, such as is the rule in mild cases. About the middle of the fifth day he broke out in a violent perspiration, and the eruption at once entirely disappeared.

Taking into account all cases, we have seen 527 patients suffering from smallpox during this epidemic. Among these were 14 gestating women, 4 of whom were at full term when the disease developed. All were safely delivered of living children, all however experiencing excessive and alarming uterine hemorrhage. In all of these cases the children were immediately isolated from the mother and carefully and repeatedly vaccinated. All of these infants were vaccinated as soon almost as born, but in three of them no vaccinal immunity could be induced, and these suffered from the disease. In one child, however, the vaccination followed a classical course and left behind a typical pitted or punctated scar. This child escaped. We might here remark that in this last mentioned child the operation of vaccination was performed when the infant was fifteen minutes of age. In the other women the gestatory period varied between the third and seventh month, and they all aborted during the prodromal stage or just as the eruption was appearing.

We regret very much that we did not have opportunity for extended and careful post-mortem observations, but the conditions under which we were working excluded this line of study.

There is one matter that we desire to call attention to, and that is the occurrence of sudden death in comparatively mild cases, in the onset of convalescence or even after the convalescent period has set in. We have noticed this in several cases, and after it had happened a couple of times we were very much guarded as to prognosis. For example: An individual is attacked with the symptoms of, and goes on to develop the various sequential phases of ordinary, or even a mild form of distinct smallpox. The papules change to vesicles. these to pustules, the latter dessicate, the crusts are coming off, the patient is progressing to recovery, his friends are joyous at the information that he who has been sick will soon be well; when suddenly the case will assume grave aspects, a rapid feeble pulse, shallow and quick respiratory movements will supervene, his skin will become cold and livid, he will fall into a semi-comatose state, then into coma, and in an hour or two will be dead. Of course theories can be advanced to explain this untoward happening, but painstaking examination in the necropsy room would be of vastly more value than the advancing of theoretical illustrations which are always more or less unsatisfactory.

Before leaving this portion of our subject we will touch upon the question of the differential diagnosis of smallpox. This disease is at one and the same time the most easy and the most difficult disorder to diagnose. For this reason it is even of more interest to the official medical sanitarian than to the private practitioner. The family physician sees the case early, knows the history and watches its progress. On the other hand the medical officer is suddenly confronted with the patient perhaps in the pustular stage, and he well appreciates the fact that in very many instances he can place but little reliance on the history as given by the sick man and his friends. For very often every effort will be made to deceive the examiner, and the entire subjective portion of the evidence submitted may be absolutely without value; and a weighty responsibility is imposed upon the official. On his decision rests much of great importance: the removal of the patient from his home to the Isolation Sanitarium, the placarding of the house, and perhaps serious injury to business interests.

Considerable difficulty will be experienced in differentiating between purpura variolosa and morbilli hemorrhagici, and, in the early stages, between petechial hemorrhagic smallpox and a severe case of ordinary measles. And here it might be remarked that in the adult, measles is quite often a very grave and serious disease.

Again it must be borne in mind that the classical prodromes of variola are not by any means always present. Thus we have seen cases in which a rigor and a febrile movement were the only symptoms ushering in the attack—no headache, no backache. Again, where there was no rigor, but a fever with nausea and vomiting being the sole premonitory indications. And we have seen mild cases of varioloid occur absolutely devoid of a prodromal stage—at least of any that was appreciable by the person affected, the eruption being the only evidence. In a child the disease might be mistaken for a case of purpuric cerebro-spinal meningitis, as in the young a large number of smallpox cases are initiated by a convulsion or a succession of spasms. In certain instances, without a previous history that can be depended upon, it is not at all easy to distinguish between variola in the stage of maturation, and the pustular syphilides, and the diagnostician will often find himself on his mettle when eliminating varioloid from varicella, and variola from certain manifestations of impetigo contagiosa.

While our service in the epidemic was outside of hospital work and we therefore could not pay much attention to treatment, still our observations among those patients who have been under our care warrant us in asserting that the less that is done in the way of medication during the prodromal stage, the better it is for the patient. The bowels should be promptly and efficiently unloaded, and we can not recommend too highly the liberal use of cold water, both internally and externally. The patient should be made to drink freely and frequently of cold or cool water, and the ice-pack or cold wet towel to the head with frequent sponging of the face and hands, and even sometimes of the body, will prove very grateful and quieting. In fact we look upon hydrotherapeusis as being of great value in subduing the thermic disturbance, in overcoming delirium and inducing rest all through the disease. There is no doubt but that fresh air, cold water and good nursing are the essentials for success.

Concerning the period of incubation of smallpox, we can say by observation that in malignant variola it is about seven days; in ordinary smallpox about fourteen days; and in varioloid about three weeks.

It is, perhaps, proper we should here note that we have found a wide diversity of opinion among our colleagues of the medical profession as to contagion-diffusion in given cases; some holding that the disease is non-contagious before the appearance of the pustules. Unfortunately among many, smallpox is looked upon too much as being a skin disease. They forget that it is a general, constitutional disorder with general and local morbid changes.

While the exoteric manifestations require consideration in this connection, the esoteric processes that have existed before the exoteric must be taken into account. In studying the physiology of respiration it will be noticed that the expired air is surcharged with vapor which represents water extracted mainly from the plasma sanguinis of the circulating fluid in the pulmonary capillaries; this vapor being really a solution of effete or excrementitious material removed from the blood, and in the smallpox sufferer carrying specific toxic matter in addition. We believe smallpox to be contagious from its earliest to its latest stages; we hold that even in the prodromal period the expired column of air contains poisonous matter that is capable of inoculating a non-protected individual; but we consider that one stage of the disease is more potent as to contagious intensity than another, the most virulent period being when pus formation and extrusion occur. It must be borne in mind, however, that even after the crusts have become completely dry and have fallen off, that the thin exsiccated scales from the external layer of the epidermis, floating in the air, may become prominent factors in etiology.

We now turn to the second heading of our report, to-wit, the management and treatment of smallpox cases:

The more we have seen of this disease, the more satisfied are we of the correctness of the policy outlined by the Commissioner of Health in ordering the removal of all affected to the Municipal Quarantine Hospital. Such removal, with subsequent thorough and efficient disinfection and cleansing of infected premises, the complete destruction by fire of all contagion-bearing substances which can not be cleansed, the careful attention to the vaccination of all exposed individuals, and daily inspection for at least two weeks of localities in which smallpox has occurred, constitute the only certain method of preventing its spread.

The daily visitation of infected houses and families by a medical officer is very important. This should be done for a period corresponding to the average length of the stage of incubation. In this way repeated revaccinations of exposed persons can be performed, and the removal of freshly occurring cases be accomplished, before the stage of maximum contagious intensity is reached. This removal of the sick should be promptly done, and should be a law the only permissible exception to which would be such a condition of the patient as would peradventure render his removal a cause of his death.

We made it a rule during the epidemic, in our district, faithfully to carry out the orders in this regard, and in every instance—except in those wherein removal might endanger the patient—within six hours after a diagnosis of smallpox had been made, the sick man was safe in the Hospital, the disinfectors were at work in his house, every person exposed was vaccinated, and our vaccinators were attending to the neighborhood. Six hours was the maximum period allowed to lapse, but in many instances two hours sufficed to have the above conditions brought about.

We feel gratified at reporting the entente cordiale that has existed between our colleagues of the medical profession in this district and ourselves, both as to attention to vaccination and the value of quick recognition of the disorder. We have daily been called in consultation, many times over the length and breadth of the district, and some idea of the work required may be had when we state we have made as many as forty-two calls in a single day, discovering out of this number 18 cases in which a smallpox diagnosis could be immediately made; that all of these were promptly removed, exposed individuals immediately vaccinated, in apartment houses or where the element of suspicion existed, every part of the building searched for concealed cases, the disinfection of the premises looked after, and vaccinators put to work in the vicinity.

It should here be stated that these vaccinators were never allowed to enter the infected quarters or vaccinate the inmates of a home in which a case had been diagnosed, or from whence a case had lately been removed. This we personally attended to, and the duties of the vaccinators were confined to the neighborhood.

On account of the multifarious matters that had to be looked after in connection with each case of smallpox, it became quite a complicated task that we had to perform to enable us to fully carry out the policy of the Department—that of immediate and prompt removal of the sick and quick attention to the surroundings. It is dangerous to the community and dangerous to the patient to allow a case of smallpox to remain at home, unless under specific conditions that are the exception and not the rule. So strong are our convictions on this point that were we individually to suffer from the disorder, we would prefer—except, perhaps, in excessively cold and stormy weather—being placed in bed out on the open prairie with no roof over us save the vaulted dome of heaven, no closed walls to shut out nature's great disinfecting agent—pure fresh air; but with plenty of warm bed clothing, a dark colored tarpaulin to keep off the direct rays of the sun and protect us from the inclemency of the elements, with nourishing food and a liberal supply of good drinking water we believe our chances for recovery would be far better than with all that therapeutic skill and cunning could devise were we confined in a close room and forced to breathe over and over again foul air surcharged with the poisonous exhalations from our own bodies. For this reason we recommend very highly the hospital-tent system, in which, under ordinary climatic conditions, we believe the best results can be obtained.

We have to report that all throughout the epidemic, but most especially in its early history, we met with most pronounced opposition from the general public to removal of the sick and also to the vaccination of those exposed. The opposition to the removal to the Isolation Hospital, of those affected, was most active. Sometimes we have had the house barricaded against us; at other times we have been threatened with bodily injury, and on one occasion an irate father, revolver in hand, stood by the bedside of his child and dared any official of the municipality to come within five feet of his offspring. In spite of this condition of affairs we are gratified at being able to report that in every instance, save four, we have succeeded in peaceably and gently carrying out the plan that we know to be the best for all concerned, and that but twice have we been forced to call upon the municipal authorities for aid. Our modus operandi has always been to convince the sick man and his relatives that we were acting in his and their interests; that the mortality among those improperly treated is alarmingly high as compared with that among those correctly taken care of; that it is selfish for him to stay at home and expose those dear to him to more intense contagion than perhaps they have yet received. And to the relatives we have used the argument that it is cruelly selfish in them to endanger the life of the patient for purely sentimental reasons; that in the hospital only can he be surrounded by conditions the most favorable to him, from a medical, therapeutic and hygienic point of view; and that, finally, the sanitary interests of innocent neighbors must be taken into account.

We have always first quieted or overcome the angry or stolid opposition we have met by assuring the parties concerned that, as physicians, we were acting for their best interests, and we have succeeded in obtaining respectful consideration of our side of the question, and the barricades have been removed in every case—except the four before mentioned—after we had extended the positive promise that the patient should not be taken away without the consent of all interested, but that first we would ask them to hear the reasons from us why such removal ought to take place. And, except as previously indicated, our arguments have obtained full acceptance, even in aggravated instances of opposition, and we have departed the acknowledged friends of those who on our arrival were positively inimical.

In dealing with the sick, gentleness and quiet firmness should characterize the action of the medical sanitarian, who should be guided by the old adage—Suaviter in modo, fortiter in re. For this reason, while we appreciate the value of the services rendered to the Department and to the public by the city police, we deprecate the use of the police in medical sanitary work. The police officer is always associated in the minds of the masses with criminality and punishment, and his entrance into the homes of the lowly is a menace, and at once puts them on the defensive; while in the homes of the better class it is often resented as being uncalled for and insulting. Then, again, the police officer is not as well fitted by nature and education to deal with the invalid as is the physician, whose duty and pleasure it is to comfort and solace the sick, the sorrowful and the dying. We believe that a Municipal Health Department should be on such a basis as would enable it to handle any and every epidemic independently, and not be obliged to request police assistance except under extraordinary circumstances.

There is no part of the subject that is so interesting to the physician as immunization, and the specific value of the Jennerian procedure is so indubitably established that it would be ridiculous for us here to dilate upon it. But our experience has taught us certain matters appertaining to the question, concerning which we would respectfully submit:

First, there is no period of life at which vaccination may not safely be performed; and Second, there is no physiological condition under which the human animal can exist which will contra-indicate the performance of the operation.

We have ourselves vaccinated individuals successfully and without untoward results, whose ages have varied between very wide limits—these limits having been between fifteen minutes of age and ninety-four years of age. It is a great mistake for a physician to say that a child is too young to be protected from danger, or a man so old that he can safely be exposed.

Our second postulate has especial reference to pregnant women. We have unhesitatingly vaccinated such women at all periods of gestation, without ever having seen any accident occur. To those who have questioned the propriety of our action we have used the following argument: Smallpox being prevalent, is it not better for the woman to subject herself to the lesser of two risks—assuming for purposes of argument that the element of risk to her in vaccination exists in any pronounced degree. Should she become infected with variola virus her chances for recovery are not good. She will without any doubt abort, and may die from excessive partum or post-partum hemorrhage. It is true, as Prof. McLane was wont to say, that some women will lose the fruit of conception should they smell the odor from an imperfectly snuffed candle; but such cases are the exception, and for her own best interests, and having her safety in view, we decidedly recommend the vaccination of the pregnant woman during the prevalence of smallpox.

Among the laity and even among many medical men there is an idea that the more severely the vaccinated suffer, the larger the local lesion, the more extensive the inflammation and the greater the area of the cicatrix, the more certain is the induced immunity, and the longer will it last. Now while it is true that a certain amount of constitutional disturbance should exist, and also that there should be a certain amount of local irritation to ensure success, especially in primary vaccinations, outside of what we will call normal limits, severity as to symptomatology very often indicates the implantation of extraneous morbific micro-organisms, and these, interfering with the course of the vaccine virus, destroy its activity and prevent the desired result. In this way, as the patient has suffered considerably, as the local manifestations have been of high degree, and as there is a large cicatrix produced, a false sense of security arises which is dangerous in the extreme. The accidental absorption or implantation of adventitious microbic organisms is excessively easy of accomplishment, as different species of these bodies are normally met with in the skin. Thus, between the epidermal scales and on the hairs are found two varieties of saccharomycetes; in cutaneous folds leptothrix epidermalis, besides various schizomycetes and five kinds of micrococci. Then when we note the fact that a very large number of people pay but slight attention to personal cleanliness, and again when we take into consideration the filthy state of the atmosphere, in which we find floating non-pathogenic and pathogenic microbes which, impinging upon the more or less damp and oily skin, become there entangled, we do not wonder at the occurrence of the accidents occasionally met with.

The opposite extreme must be guarded against. Thus we have known the integument to be first treated with carbolic acid solution, or some other germicide, the virus introduced directly, and surprise then expressed at the failure of the operation.

Another dangerous condition of false security is produced when a person is subjected to vaccination, the virus does not "take," and he is informed that therefore he is "safe," that he must be already immunized or the operation would have been successful. There are many known facts that will demonstrate the fallacy of this method of reasoning, but an important point always to be remembered by the physician is the effect of personal idiosyncracy. "What is one man's meat is another's poison," and the dose of a given medicine that might kill one individual might have no effect on another. Unless a successful vaccinal sore has been produced within at least five years, repeated vaccinations at short intervals of time should be performed until a good result shall have been attained, or until the operator is satisfied that, beyond the peradventure of any reasonable doubt, the subject is already immunized.

After experimenting as to technique, we have found the following method to produce the most satisfactory results—of course assuming the vaccine virus to be at par: We select an area on the left arm, on its antero-lateral aspect, at about the junction of the upper with the middle third of the member. This area is now thoroughly washed with clean soap and warm water, and then, with rather hot water, we wash away the soap. Dipping an ivory point in cold water we rub it on the skin at the place selected, forming a paste with the virus and water and using both sides of the ivory or bone point. At this spot, whereon we have made the paste as described, we carefully scarify or scrape off the scarf skin until little drops of lymph plasma begin to exude, or droplets of blood are seen, but we *never "draw blood."* We now rub the virus from both sides of two dampened points, one after the other, into the scarified spot, being careful not to use too much or too little water. There is no necessity of making a large scar, the scarification of a space about one-quarter of an inch square being sufficient. The subsequent treatment is simple. Cover the spot with a perforated pressed paper shield for protection and to obviate irritation from friction, scratching, and so forth; then leave it alone, under ordinary circumstances. Under no considerations should water, vaseline, or applications of any kind be made, and never should court-plaster, isinglass, rubber-plaster, or any such preparation be used as direct covering.

In closing our report we would bear testimony to the good work that has been done during this epidemic by the officers of the Department and by the vaccinators employed temporarily; and we here desire to express our appreciation of the honor that has been conferred upon us by our membership on the staff of the Commissioner during an extremely interesting and instructive episode of sanitary administration.

245 WARREN AVENUE,
JANUARY 1, 1895.

EXTRACTS FROM DRS. BENSON'S AND CHAPMAN'S DAILY REPORTS.

SO_2 as a Detective.—You may remember that, a little while ago, I reported to you in person, of the time, one Sunday morning, Dr. Garrott and I had at 627 Cornelia, in trying to vaccinate a family, in the middle flat; how, after three hours' work, we vaccinated the husband and got his consent to

vaccinate the wife, and three children out of five, the other two having been successfully vaccinated; how, after having vaccinated the husband, we found the woman had disappeared, taking with her the three unprotected children, and a most diligent search failed to reveal her whereabouts. On account of the then overcrowded state of the Isolation Sanitarium, the case in the flat overhead had to be left there and a police officer was kept in the flat and one in front of the premises. I kept the place under observation, but could not succeed in catching sight of the three children who were skillfully kept out of the way. My suspicions were so strong, as well as my belief, that the non-protected children would come down with the disease, that I put Fumigator Knittle on detective duty, telling him what I suspected. No one in the family speaks English—they are Bohemians—except the husband. They would not let Knittle, who speaks Bohemian, in. On Friday I told Knittle to fumigate the flat in which these people were, and to force his way in, if necessary. This Knittle proceeded to do, and in this way he found the mother and children, as the people were afraid, I suppose, they would be suffocated by the fumigating. The children were in the vesicular state of the disease.

I explained to the husband that if the wife and children had been vaccinated, no smallpox would have occurred, and he wanted to kill her at once. I did not wait to report the cases to your office, but went myself and cleaned the gang out and sent the three children out to the hospital, and, as one was a suckling baby, I sent the mother out also.

On the ground, or main floor, I found a young tailor, protected by vaccination, making men's clothing for a tailor of West Madison street. I ordered all work stopped, have closed up the entire building and am fumigating every corner, rooms, hallways, closets and all. The people where the original case occurred, two days ago, moved out, and we subjected that flat to a thorough fumigation. Now it will be fumigated again with the rest of the house. Diligent search in the neighborhood shows thorough vaccination; our vaccinators have gone over the place twice and will do it again, and on the Sunday morning that Dr. Garrott and I were there, we looked into the state of the people there and found all we could speak to recently vaccinated.

May 6, 1894.

How Contagion is Spread.—As an instance of the way in which smallpox has been spread in this city, permit me to call attention to a certain case. From your office yesterday I received word to call at No. 336 Rumsey street. Everybody, front and rear, positively denied the existence of sickness either in that house or in the neighborhood. I went into the main flat of the above number and asked for the second time in this family if anybody had recently been sick, to which the response was "No." I noticed a young girl here with a pale, sickly aspect who kept her hands under an apron. Her face was slightly roughened but not discolored in any way. I insisted on seeing her hands which showed unmistakable evidences of smallpox, such evidences being much more plain on her feet. She and her family then confessed that she had had smallpox, had been taken down with the disease three weeks ago, that her father and brothers had gone to their usual work every day, and that visitors from near and far had been in to see her right along. Talk of spreading contagion! I sent her to the Quarantine Hospital so she could receive a disinfectant bath. The place has been fumigated and we are vaccinating the neighborhood. Our vaccinators on duty there have been instructed to find out where these men-folks work, and vaccinate, but any case infected from this girl is almost too late now for immunization by vaccination. I reported to you concerning the infected individual on South Clark street; Dr. Chapman reported the case of the colored man working and walking around with a bad case of smallpox, and these cases alone would be sufficient to infect an entire city.

MAY 8, 1894.

Not Smallpox Until Death Ensues.—I found to-day a child dead at — W. Indiana street from smallpox. The parents told me that Dr. ——— had been in attendance daily since the child took sick, about fifteen days ago; they also said the doctor said all along that it was measles, and allowed the father to go to work, and told them that there was no danger. It was a typical case, and what makes me think that Dr. ——— knew the child had smallpox is, that last Tuesday he vaccinated the mother and father. He made his visit this morning and finding the child dead he telephoned the Department that the child had died of smallpox.

MAY 13, 1894.

Chicken-pox Mistaken for Varioloid.—In the rear flat at No. — South Morgan street there lives a family named G———. About four weeks ago, so Mr. G——— relates, he was taken sick with a chilly feeling, headache, and pain in the small of the back, which symptoms were accompanied by a febrile movement. After three or four days he felt better and then noticed some little vesicles or, as he describes them, blisters, on his forehead, face and hands and forearm. Later a few were seen by him on the anterior aspect of his thighs. He sought advice and was informed that he had chicken-pox. On the 17th of May, his wife, and on the following day his two children, were taken sick, the wife complaining of most intense back-ache, pain in the head and fever. A physician was called who saw the cases for the next few days, and who pronounced the disease to be chicken-pox. No vaccinations were done by this gentleman, and some of the neighbors becoming suspicious, we were sent for; visited the case on May 24, and pronounced the disease in the mother and children to be smallpox, the husband by this time being entirely well. The husband and the two well children were at once vaccinated by us—the husband merely as a matter of form. We were afraid that in the children the vaccinations were too late to produce immunization, but we believed they would at least produce modification. These two children we have carefully watched, and their vaccinations "took" splendidly. In one of these children we to-day noticed unmistakable signs of varioloid, as per enclosed card. In this child the vaccination was too late to prevent smallpox, but just in time to modify the smallpox contagion and produce varioloid. In the father several vaccinations have been performed without result.

My belief is that the father when sick about four weeks ago had an attack of varioloid. I questioned him particularly concerning his symptoms at that time, and as to whether the fever appeared before or after the eruption, and he always told me the fever was one of the earliest things he noticed, and that it disappeared when the spots came out. This does not occur in varicella, in which disease the febrile movement follows the appearance of the eruption. Taking all together I believe I am right in my premises: that the father had varioloid, and that if then the disease had been recognized and proper vaccinations performed that no cases of smallpox would have followed; that from his varioloid the wife and two children contracted true unmodified smallpox; that the vaccinations performed by us on May 24 have saved the two remaining children from having unmodified smallpox, this vaccination having been performed too late to produce immunization, but in time to modify the intensity of the pox virus, and the child has varioloid instead of variola. The youngest child has been feeling somewhat badly for a few days, has a slight rash which to-day had no vesicular characteristics; but we deemed it best to send the child to the hospital with its brother for the following reasons: The child has a working vaccinating sore, it has already been exposed as much as possible to smallpox contagion, its mother and brothers and sisters are at the hospital and the father alone at home could not take care properly of the little one.

JUNE 5, 1894.

Night Work.—When I went last night to remove the case of hemorrhagic variola, at 402 West Congress street, I was refused admission. Necessary arrangements had been made in accordance with the consent of all parties in the afternoon; the ambulance and bearers were waiting and the fumigators in readiness to take charge of the premises as soon as the patient was removed. Having other cases to attend to I had no time for argument or persuasion, so I at once put a police officer in front and one in the rear of the house. At 4:00 o'clock this morning I went over, saw that the officers understood their duty and had the first two officers relieved by two others. I will call about 8:00 or 8:30 and see the patient again. Dr. Chapman and I have been up all night attending to removing patients and have everything ready this morning for the fumigators. Owing to our medical detective system, Dr. Chapman yesterday unearthed quite a nest of concealed cases in his district. This concealing of cases is a terrible factor in keeping contagion afloat. In all the cases the people seem to be actuated by terror and tell us of the fearful things they have read in the papers of the Department and the Quarantine Hospital.

5:30 a. m., JUNE 5, 1894.

Concealed Cases.—At 19 Clarinda street, in the rear, I found a baby dead from hemorrhagic smallpox, and from appearances it was a very severe case. I saw there a girl just about recovered from ordinary smallpox, and after some investigation I discovered a boy suffering from a fairly mild form of the disease. These cases were all "concealed" ones, and had been kept secret on account of the intense terror felt by the parents at the idea of a health official visiting them. One of the parties told me they had read so much in the papers that they were frightened. I am vaccinating this territory and will keep watch over it, but the situation is certainly dangerous.

JUNE 7, 1894.

Gastric Fever and Chicken-pox.—The call at No. — Johnson street I found not to be in my district, being south of Sixteenth street. I found there a Mrs. R—— and daughter. About two months ago Mrs. R—— was treated at the Quarantine Hospital for smallpox. Her daughter for the past four days has been suffering from a fever. To-day there were no indications of smallpox. The mother does not think it possible for the daughter to have the disease, as she told me confidentially that when she was taken to the smallpox hospital the daughter was taken to an aunt's at Pullman and there had a mild varioloid which was kept secret. I believe the inspector of this district should be notified. I desire to report that at — North Wood street I found a man in the pustular stage of smallpox. During his sickness he has been under the care of Dr. ———, who has been treating him for "gastric fever and chicken-pox." The whole neighborhood relied on this doctor, as the question of smallpox was raised, but his assurances quieted the people, who have been going in and out of the room, sitting and talking and shaking hands with the smallpox patient. Every day or so a committee from the lodge has called on this man and returned straight from this infected place to family, friends, business and home. An hour before I called, this Dr. ——— preceded me, examined the man and told him he had "no smallpox." Acting on this the man went down in the yard among a lot of people. I will know by to-morrow where this individual got the disease, as we have our medical detective, Dr. Rogers, out on the trail. Such action as described of Dr. ——— is positively criminal—criminal neglect or criminal ignorance. With reference to the case at 417 West Madison street, I would state—yesterday this case had not developed any vesicles when Dr. Chapman called, and we have made a rule never to send a case to the hospital while in the papular stage. We always wait for vesicles. We have seen many a well-marked papular eruption fade away in 24 or 36 hours.

JUNE 10, 1894.

[Between 7:30 a. m. June 10, and 6:00 a. m. June 11, Drs. Benson and Chapman examined 32 reported cases; diagnosed 13 of these as smallpox, superintended their removal to the Isolation Hospital, took a census of all belonging to the infected premises and vaccinated all that were found; furnished vaccinators the names and addresses of others and started the house-to-house vaccination of the various neighborhoods. The fumigators began work by 10:00 a. m. of the 10th, and the disinfection of the 13 infected houses was completed soon after midday of the 11th.]

Sequelæ of Smallpox.—During the early part of the epidemic of last year, before the opening of the Ogden Avenue Isolation Sanitarium and while the old Quarantine Station was over-crowded, we were obliged to isolate and treat a number of cases of smallpox at their own homes. In addition, a certain percentage of cases sent by us to the Municipal Hospital came under our observation after discharge therefrom. These people have been watched by us now up to date for from periods varying from seven to ten months; our idea being to note what sequelæ might occur. We do not here desire to call attention to all of the various pathological conditions that in these persons might be called variola sequelæ, but would say that of the individuals so selected by us for this purpose, fifteen have suffered at times differing from four to seven months after recovery from smallpox, from abscesses in some portion of their economy. Of these fifteen cases, nine have had otitis media suppurans: three have experienced multiple suppurating foci in the cervical glands and in the floor of the mouth; one has been troubled with suppurative parotitis; and two cases of axillary abscess have been encountered. We desire to state that in these instances we have been absolutely unable to determine any direct etiological factor outside of the smallpox attack, and the patients themselves in each case have referred the condition to the previous variola.

JANUARY, 1895.

Smallpox Experiences in 1894.

HEMAN SPALDING, M. D., *Medical Inspector.*

A correct and efficient method of handling smallpox was early adopted by the Department of Health in the smallpox epidemic of 1894, but a lack of money and men, and the impossibility of procuring adequate supplies of safe and effective material, delayed for a time the carrying out of the most important means of staying the headway of this disease, namely: house-to-house vaccination of the entire city. This, however, was finally accomplished, and meantime the method pursued when a case was discovered or was reported to us was to station an officer at the house at once with instructions to allow no one to enter nor leave the house until the patient was removed to the hospital, the inmates vaccinated and disinfected, and the house disinfected. The quarantine was then removed, and all persons exposed were seen every two days for a period of fourteen to twenty days. If any fell sick, they were at once isolated so that no exposure of unvaccinated persons ever took place after we were in charge.

As soon as the patient is removed to the Smallpox Hospital, the inmates of the house are given a bath in a solution of corrosive sublimate of the strength of one part of the sublimate to five hundred of water. The clothing worn by the inmates is sponged off with the same solution. The people, thus disinfected, are then permitted to leave the house; all windows and doors except one are sealed tightly; the bed from which the patient was taken is soaked in the corrosive sublimate solution; the house is dampened by sprinkling water on the floors and all available places. Sulphur is then ignited—three and one-half pounds to every 1,000 cubic feet of space—the remaining door is sealed on the outside, and the house is left sealed for twenty-four hours, when it is opened and the bed taken out and burned, together with any other articles we think unsafe to preserve.

We use fire, boiling water, corrosive sublimate and sulphur burned in the presence of moisture in every case. We do not depend upon any one of these agencies, but use them all, and in no instance have we been able to trace a case of smallpox to a house we have disinfected, though new families are moving into these houses constantly.

I have been thus particular about describing the disinfecting process because some very respectable people think all we do is to make a dry fumigation with sulphur. We know what disease germs we can and what we cannot destroy with this process of disinfection. We know all the books tell about it and some things the books do not tell. We have made experiments with cultures of bacteria that prove some things not generally known, and which have corroborated theoretically what we had already learned in practice.

Removing smallpox patients to the hospital is of the greatest value in controlling the spread of the disease, and there is hardly any condition of the patient that will not permit the safe removal if proper care is taken. I have moved with perfect success a woman in the ninth month of pregnancy suffering with semi-confluent smallpox; she was moved a distance of eight miles, recovered from the disease without accident and gave birth to a healthy child at her own home a few days after her dismissal from the hospital.

A year ago the hospital was full and for two weeks we were compelled to leave patients in their homes. The disease spread with frightful rapidity, but was checked up as soon as additional room was provided at the hospital and the removal of patients was resumed.

The work of suppressing an epidemic of smallpox is not so easy as some who have had no experience may think. It is not an easy matter to enter a man's home, take possession and send his children or wife or perhaps both to the Smallpox Hospital and convince him at the same time that you are doing him and his family an act of kindness for which he will be thankful afterwards. By law and right the patient must go to the hospital. To accomplish this object the surest course to secure success is to exercise the highest instincts and virtues of a physician and a gentleman while as a city officer you are advising a stricken family.

From the beginning of the epidemic to the present time vaccination has been pushed intelligently, systematically, persistently, and with a relentlessness that never failed of its object. Vaccination in the latter part of the year required tact, courage and a high sense of duty on the part of the vaccinator. Up to that time all who were willing to be vaccinated were vaccinated; those remaining were mostly those who "know it all"—the anti-vaccinists and those who are not afraid of smallpox—the ignorant, the prejudiced and the reckless. This winter nearly every patient taken to the Smallpox Hospital was either some one who was not afraid of smallpox, and would not be vaccinated, or some one who did not believe in vaccination as a preventive for smallpox. To meet this class and overcome their prejudices and ignorance upon the subject of vaccination and to attempt to arouse in them the sense of duty to themselves and their helpless children was a task the difficulties of which no one can appreciate who has not been compelled to invade the homes of the ignorant, the vicious, and the wealthy, dignified, "know-it-all" anti-vaccinists, and receive their abuse and insults while the officer kindly but firmly wins his way to their hearts and, against their protests, protects them from the most dreaded of all diseases—smallpox. Nothing but a high sense of duty and the thought that they are doing good to human beings who are less fortunate in their knowledge of facts than themselves, will keep men persistently and effectively at work at so disagreeable a task.

The truth of the value of vaccination in preventing smallpox has long ago passed beyond the stage of argument. It is a rare thing for a person with one good vaccination to die of smallpox. If the subject repeats the vaccination till the virus no longer takes, he will be exempt from taking smallpox in any form. I do not say, "Please believe this," but state it dogmatically, as a fact. In the light of today, it *must* be accepted as a fact proven.

Persons who are exposed should be vaccinated on both arms. This is important, for often, through some fault of the vaccine point, or the arm, or the vaccinator, one arm may fail to get sore while the other "takes." I have seen this method save so many that I insist it should be done. I take points from several boxes and rub several into each arm, though I only scarify one place on each arm. If you get the vaccination to take promptly after exposure you will always save the life of the subject and usually prevent smallpox in any form.

Of the hundreds of cases of eruptive diseases that I have been called to see during the year 1894 many things of interest have been observed, a few of which are here presented.

As I do not intend to enter into an exhaustive differential diagnosis of smallpox in its various stages, I will omit a description of the usual typical case. . My object is simply to record a few examples of the unusual types of smallpox which I have seen personally, believing that when a suspected case of smallpox is under examination, a knowledge of these examples may be of service in determining the presence of that disease at any stage.

In the start I wish to say, the term varioloid, meaning like smallpox, should no longer be used. The writers do not agree as to what to include under that name, some calling all mild cases of smallpox varioloid, while others include in the term only such cases as are modified by vaccination. Frequently I have had to spend valuable time in explaining the identity of varioloid and variola to people afflicted with the former, and sometimes had considerable difficulty in inducing them to consent to be taken to the Smallpox Hospital, because their doctor had told them the disease was varioloid, but had failed to explain to them that that term means mild smallpox. Many have the impression that varioloid is not smallpox, and think if they are taken to the Smallpox Hospital while sick with the former disease they are liable to contract the latter. In other instances people who were told they had varioloid took no precautions to prevent the exposure of others, because they thought varioloid less contagious than smallpox. The term is a useless one, and it confuses the laity. Smallpox is smallpox, mild or severe, and should be called by that name or its equivalent, variola.

Generally the diagnosis of smallpox presents no difficulties where the history and symptoms are truthfully given and the eruption is present. An absolute diagnosis of smallpox before the papule appears cannot be made, except in the form of hemorrhagic smallpox, known as purpura variolosa. In this form the onset of the characteristic symptoms may be so violent as to make the character of the disease clear, though the patient may die before any papular eruption can be seen. After seeing one case of purpura variolosa, the difficulty of recognizing the next has largely disappeared. This form of smallpox is somewhat rare and may be mistaken for malignant endocarditis or, in some instances, for cerebro-spinal fever. In malignant endocarditis there is usually a history of some known disease, such as erysipelas, pneumonia, gonorrhœa or puerperal fever. In cerebro-spinal fever the headache is in the back of the head, while in smallpox it is almost always frontal. The rigidity of the muscles of the neck and retracted head, so pronounced in cerebro-spinal fever, are rarely present in purpura variolosa. But it must be remembered that meningitis, with its accompanying symptoms—petechial eruptions, and hemorrhages from the mucous surfaces—may be present in any one of these three diseases. It is the variety of purpura variolosa with the mental symptoms that is most likely to be mistaken for cerebro-spinal fever. In the former disease the entire surface of the body and face presents a more intense redness than in any of the cases of the latter that I have seen. The skin looks swollen and almost copper-colored, and the hemorrhages into the tissues and from the mucous membranes begin earlier and are more general and profuse in the former than in the latter disease. In this form of smallpox there are often deep-seated hemorrhages into the cellular tissues, which can be seen, dark, blue and bulging, under the skin. The skin over this bulging sometimes has a normal appearance. It gives the appearance of a bullet buried beneath the skin. The temperature in these diseases being variable cannot be depended upon for diagnostic purposes.

The most difficult cases of smallpox to recognize are the very mild ones, where the people purposely deceive in giving history, symptoms and information concerning residence and exposure. If your patient is a negro and the place of examination a dark basement or the street at night under a street lamp, as has frequently been the case, the difficulties of arriving at a correct diagnosis will at once appear. Tramps, white and black, sleeping in alleys, vacant lots, doorways and cheap lodging basements, many of them affected with syphilis and often taking iodide of potassium, were encountered in large numbers. This class of cases, with a pustular syphilide or acne vulgaris, from the use of iodide of potassium, and a fair ability for lying about their history and symptoms, will puzzle the most experienced diagnostician. These street and lodging-house cases must be disposed of at once, for there is no place to put them to wait for developments. To let a smallpox patient roam at will about the slums of a city, or to send a non-variolous patient to the Smallpox Hospital is, it is needless to say, a serious mistake. In these cases the lying histories must be disregarded at once and you must depend upon your knowledge of the appearance of the eruption and your ability to cross-examine the patient and to judge the true from the false in his contradictory stories. If you have had experience you will be pretty certain to make a correct diagnosis. If you have had no experience in eruptive diseases you are in trouble, and either the patient or the neighborhood is in danger. Nothing that I can say here will help to arrive at a correct diagnosis. Nothing but ability and experience will prevent disastrous mistakes under these circumstances.

A case of smallpox with the initial rash present, and which may resemble measles so nearly that no one can distinguish the difference in the appearance of the eruption, if seen before the papules appear, can easily be mistaken for measles. This rash appears early, usually on the second day of the fever, and passes away in about thirty-six hours while the papules are appearing. Usually there is something about such a case that will make an acute and experienced observer want to see the patient again before pronouncing it measles. A less cautious observer might say at once it is measles and regret his haste afterwards and when too late.

The fever falling as the initial rash appears would suggest smallpox instead of measles. In measles the temperature is at its height when the rash has fully appeared, on the fourth or fifth day. In smallpox as the rash appears, on the second, third or fourth day, the temperature has almost disappeared. I have sometimes seen appear over the body, with this initial smallpox rash, quite a number of round, full vesicles as large as a small pea, resembling, exactly, the vesicles of chicken-pox; they break and disappear in a day or two.

The initial rash resembling scarlet fever is less liable to lead astray than the measly rash just mentioned. The appearance of papules as the rash fades and the falling temperature will guide aright.

Some writers mention a variety of smallpox which they name variola sine eruptione—smallpox without eruption. Osler says that in his experience with smallpox in Montreal he never saw nor heard mentioned a case of this variety. During my experience in Chicago I have seen about thirty of these cases, where there was a history of exposure along with other members of the family, followed in from ten to fourteen days by the classical symptoms, and while one or more members of the family would develop the rash, others would be free from any external eruption, and the fever, after the third or fourth day, would be absent. I have not seen this variety in any but vaccinated subjects, but it is not, as Osler says, confined to young subjects. I have seen it in adults past middle life. I will relate the history and circumstances surrounding a few of these cases as proof of their existence.

A child died of smallpox at home on the ninth day of the disease. Five other members of this family contracted the disease within two weeks; three of these children were taken sick the same day. The three took to bed with severe headache, backache and fever. On the evening of the third day the eruption appeared on two of the children and they were removed to the Smallpox Hospital. The third child, who had been successfully vaccinated six years previously, showed no signs of an eruption. On the fourth day the fever left, just as it would if the eruption had appeared, but not a mark appeared on his skin anywhere. He got up and went about his business in a few days. In this family the three unvaccinated persons—a child, a young man and the father—all died, while the other three, who had been vaccinated—a child, a boy of sixteen and the grandmother—had the disease in the mildest form and recovered. Four other members of this family, who were vaccinated previous to exposure, did not have the disease in any form. About the same time the doctor who attended the first child that died in this family fell sick with chill, fever, headache, backache, pain through his bones and pain in the epigastric region, with coated tongue and some nausea. In four days these symptoms all disappeared, but no eruption of any kind appeared. The doctor had been successfully vaccinated when a boy. Before the doctor recovered, his little boy, who had never been vaccinated, was taken sick with the same assemblage of symptoms and was taken to the Smallpox Hospital on the fourth day with a severe form of smallpox. The disease evidently had been brought to the boy by his father while attending the case in his care two weeks previous.

Again, at West Pullman—where a case of smallpox was allowed to run its course, under the supposition that it was chicken-pox—about twenty-five persons were exposed to the disease. Most of these were young men and all were vaccinated previous to exposure except four. These four contracted the disease and three died. The doctor who made the mistaken diagnosis was one of the victims. Three, whose vaccinations were old, had smallpox in a mild form and recovered. At the same time that these were taken sick at least six of the young men who were vaccinated became sick in a mild way with fever, headache, backache, coated tongue and loss of appetite; in three or four days they were well but no eruption appeared except on two—three or four papules appeared on the faces of these, which were unmistakable smallpox eruptions. The symptoms in all these mild cases were identical up to the fourth day.

I have seen three cases of the corymbose variety of variola. These are cases where several patches of thickly clustered and early cohering vesicles are present. It would seem to me carelessness to mistake this variety for herpes zoster, which it does undoubtedly resemble somewhat. These clusters of eruption are in advance of the rest of the eruption, but the eruption is not confined to these patches. To avoid mistaking this variety of variola it is only necessary to know that there is such a case to be found occasionally. Fagge states that he never saw this form of eruption.

Another variety, known as crystaline or horn-pox, is occasionally met with. The patient has the regular classical symptoms up to the vesicular stage. The vesicles do not fill full nor turn pustular, but dry up and become hard and scale off a little sooner than in the usual variety of the disease.

A word about chicken-pox. A recent careful observer has laid much stress upon what he believes to be a fact, namely, that varicella vesicles are never seen on the soles of the feet or in the palms of the hand. I have frequently heard this statement. It is not correct. I have seen vesicles and pustules upon these surfaces repeatedly—saw three very remarkable cases where the soles of the feet and palms of the hands were covered with large vesicles which were pustular in thirty-six hours. In chicken-pox keep in mind that in two or three days the eruption is as much advanced as is the case in variola on the eighth or ninth day; that usually the eruption on the body is in advance of the eruption on the face, while the reverse is the case in smallpox. And, lastly and most importantly, you will see side by side on the body in chicken-pox the eruption in three stages—the beginning, the fully developed and others breaking down and drying up.

3141 RHODES AVENUE,
JANUARY 1, 1895.

The Municipal Smallpox Hospital: 1894.

H. S. Warren, M.D., *Physician-in-Charge.*

The old hospital building, erected shortly after the Great Fire of 1871, and condemned by every Commissioner of Health since 1877, consists of a brick structure, two stories high—the lower floor used for kitchen, laundry, dining-room for the Sisters and attendants, the office, drug room and sleeping apartments; the upper story, to which but one narrow winding wooden stairway leads, is divided into seventeen small rooms, of which the largest accommodates seven patients, the smallest, one, which in itself shows that it is almost impossible to properly treat smallpox patients with a small force. There is no ventilation except through windows, and no heating system; each room must be heated with a stove, thereby exposing the building to the danger of fire—so much the worse as all patients get delirious at a certain stage of their sickness. There is no disease where an even temperature is more required than smallpox, which cannot be had by this mode of heating, and many complications and unnecessary deaths must result. Patients with stoves in the place, endeavoring to keep warm, burn on one side whilst they freeze on the other. I believe had we had steam heat last spring and winter, many more patients could have been saved. The building is lighted by kerosene lamps, one or more in each room, which patients in unguarded moments in their delirium might upset and cause a conflagration and the terrible cremation of many of the helpless. The fact that we had no fire is due to the careful watching given.

The new structure consists of one-story frame barracks, divided into fourteen wards.

I believe there is no hospital so hard to manage and give satisfaction as a smallpox hospital, as people are forced from their homes, and the tendency for them is to be dissatisfied if there is the slightest cause, as they are placed here against their will and are looking for trouble all the time. They are taken from their families, their nurses and their doctors, but of the thousands of cases who have been treated and taken care of, I know of but three or four instances where they have made complaints, but have gone away with praise for the careful nursing and attention given them, even though one or more of their families have died here. They still praise the institution, but one and all condemn the building, which is a disgrace to the metropolis of the West, the City of Chicago.

Chicago spends millions for its parks and boulevards, places its convicts in castle buildings not a block from the Smallpox Hospital, and even now has money enough to erect, in the face of this disgrace, another splendid building for the numerous young criminals; and while these transgressors of the law are given steam-heated apartments, lighted by electricity, ventilated by the most modern appliances, plumbing the best the age can furnish, the unfortunate taxpayers and their innocent children, good and well-behaved citizens, who, mostly through no fault of their own, have contracted this dreaded disease, are forced into an old barrack twenty-seven years old and a century behind in all improvements, there to fight not only against the malignity of this pest, but to contend with obstacles, which in this enlightened nineteenth century are a shame to humanity and civilization.

It is hardly necessary to describe the ordinary forms of smallpox—the discrete, the confluent and the hemorrhagic—

commonly met with and treated in hospital during an epidemic; but there is one form which seems to call for special mention, namely, the malignant confluent. I give it this name because I do not know how otherwise to designate it. It is confluent, but instead of papules, vesicles and pustules coalescing, it is as one combined papule, vesicle and pustule, covering the entire surface of the body. These can not be separated from one another except when the first few papules appear. The skin presents a dark red color, swollen and quite smooth. During vesication the cuticle does not seem to be raised but separates from the layer beneath, and the patient, in turning over in his bed, tears this separated portion of the skin away and leaves a red unprotected surface, which bleeds at the slightest touch. By this time pustulation has taken place on the face and hands, which are quite dry, fissures extending across the face from which an exudate is noticed of a sero-purulent nature, with very bad odor—so bad that it is almost impossible to keep the room in such a condition that attendants can remain in it longer than a few minutes at a time. An abundance of tenacious ropy phlegm is constantly secreted in the mouth and throat; the tongue is very dry with a hard dark coating. This dry, hard, thick, dark coating is also formed in the roof of the mouth. The temperature varies from 101 to 106 degrees and death ensues from general sepsis. The mortality from this form is very high.

During the year I have had to deal with a great many corneal ulcers, due to irritation and septic infection. The ulcer is at first so small and the symptoms so few that unless the physician is constantly on his guard it may not at first be observed. The ulcer rapidly increases in size and depth; redness and swelling become pronounced, so that at the expiration of a week or ten days it has perforated the hyaloid membrane into the vitrious body and destroyed the eye. The progress of the ulcer is very hard to stop and, until I employed the present mode of treatment, in nearly every case the result was loss of sight, but now every eye and sight can be saved if proper treatment is taken in time.

Acute nephritis is one of the most frequent complications met with in the care and treatment of smallpox; especially is it noticed with children, and following the confluent form in older patients. It is never noticed in the papular, vesicular or pustular stages, but always when crusts have formed or abscesses after the skin is clean of all crusts. It comes on when the physician least expects it. He thinks the patient is doing nicely, is up and about, ready to go home, when quite suddenly a rise in temperature is noticed, often to 106°. On examination it is found that but little urine has been voided during the previous twenty-four hours. The face, neck and limbs become much swollen and pit on pressure; over them the skin is bright red in color, much resembling erysipelas, dry and hot; patient often delirious; respiration and pulse fast; marked tympanites over entire abdomen; intense pain in lumbar region, over kidneys, and, on pressure, some tenderness over liver. These symptoms increase until death takes place in many cases, especially among young children. I have made many post mortem examinations in cases of this kind and find the cortical markings of the kidney always obliterated, the kidney much enlarged, white and friable, and small abscesses are often found. This complication is more often found with children and with colored patients. Children who have a very discrete form, who are able to be up and around, are suddenly stricken with this complication and die in from two to four days.

During the year I have had many deaths from pneumonia. Had we had a modern hospital, where an even temperature could have been maintained, with proper ventilation, this complication could have been prevented in many of the cases.

Quite a number of children entered the hospital suffering from cerebral meningitis, which is, no doubt, due to cerebral congestion, shown by severe headache and to the high temperature which precedes the eruption.

When the hospital contained 350 patients, last spring, erysipelas was often met with, and the spread of it was prevented only by immediately isolating the case in a ward distant from the others, and all clothing of the ward thoroughly fumigated at once. That this disease did not spread through the entire hospital is due to to the careful watching during the epidemic. As the skin of each patient is irritated and sore, the patients are all predisposed to this complication.

A number of cases were admitted in which counter-irritants had been applied to some portion of the body during the febrile stage. When the eruption appeared, although discrete elsewhere, these surfaces became large confluent patches. In one case, the patient, with a very discrete form over the entire body except from the knees down and the forearms, presented over these regions where an irritant liniment had been used during the fever stage, one uniform vesicular and pustular coalescent surface. Similar results followed where mustard had been used on the lower extremities.

There is little to be said concerning treatment. When the patient enters the hospital in the papular stage the eruption, which is most pronounced on the face and wrists, is coated with a paint composed of ichthyol, carbonated zinc, salicylic acid, powdered acacia, muriate of cocaine and glycerin. This application seems to prevent severe pustulation in many cases. It is applied daily until vesiculation is fully developed. The action of the kidneys must be carefully watched, and if not active, acetate of potash with buchu gives better results than anything else I have used.

During the papular, vesicular and pustular stages of the discrete form, little treatment is needed unless complications are presented. When the crusts have formed, unless the case is very discrete, the limbs, arms and legs, face and neck, are put up in boracic dressings; these are put on in the evening and removed in the morning, when most of the crust can be washed off, leaving the skin quite clean, thus giving the patient much comfort and allowing him to leave the hospital many days sooner than if the crusts were allowed to slowly loosen and drop off. There is seldom much rise in temperature or throat symptoms in this form.

In the malignant confluent form treatment is of but little good and to make the patient as comfortable as possible during the few hours he has to live is about all that can be done. When entered in the papular stage, patients suffering with the confluent form have the face, neck and wrists painted with the same preparation as in the discrete, except that the application is made twice daily. In many unvaccinated cases the eruption on these surfaces would form pin-head pustules and very quickly dry and clean up. But on the limbs and body the pustulation would be profuse, and to counteract the general sepsis I give permanganate of potash every four hours and it works well. Before I gave this the sepsis was frequently great, causing high temperature and dry tongue, etc. Since using the permanganate treatment I have saved many cases who otherwise would have died, especially when they entered the vesicular stage. The permanganate of potash does not prevent the pus from forming, but does prevent in many cases the general sepsis and the patient recovers without any great rise in temperature, dry tongue, heart disturbance and so forth.

During the pustular state the throat symptoms are pronounced and often they are so bad that the patient is unable to take the blandest liquid diet. On examination there will be noticed what looks like the membrane of diphtheria, but a little darker in color and extending down as far as can be seen. From this a thick phlegm is produced which the patient has difficulty in expectorating. For the throat I apply a powder every two hours containing calomel and have had better results from it than from anything else. I also use a gargle containing iron, citric acid and glycerin to remove the phlegm. But when the patient enters the hospital in the pustular stage with general sepsis already present, very little good can be had from treatment and death takes place in most of the cases. This is also true of children where this line of treatment cannot be followed. When crusts have formed I apply wet dressings as mentioned in the discrete form. About this time acute nephritis sets in, if at all—first announced by the edematous symptoms.

The complication of abscesses was treated in a variety of ways with unsatisfactory results, until I resorted, after opening the abscess, to hot boracic dressings, kept up for 24 hours, when great improvement is noticed and recovery is speedy, shortening the period of detention in hospital from two to six weeks.

Until May I did not have a single case of hemorrhagic smallpox recover. But since then about eighteen per centum have recovered, and I think that if treatment is instituted in time, about 30 per cent. will recover. I now place the patient on ergot or ergotin in very large doses, until the hemorrhage begins to subside, when I gradually decrease the dose. The patient recovers without any pustulation on the face and body. Slight vesication takes place, but dries up quickly. This treatment will only do good if begun early in the disease. If delayed until there is profuse hemorrhage, no treatment will be of any use, and in many cases no result is obtained, even when treatment is given early. The fact that some cases of this form do recover, I think, is proof of the utility of this treatment.

During the past year I had many cases of corneal ulcers, and used all the modes of treatments indicated by the authorities, but until I employed irrigation with boracic acid nearly every eye so afflicted was lost. I use two quarts of the solution at a time in an irrigation. Let the solution wash over the ulcer every three or four hours, and in a few days the ulcer will entirely disappear. The eye must be protected from exposure to the light.

It may be worth putting on record two undoubted cases of variola in domestic animals, which came under my observation at the hospital. Two weeks after my horse had been stabled in the hospital barn he was found to be ailing, and examination showed an eruption on the neck, shoulders and legs, which was at first papular, then vesicular and finally pustular, following the regular course of the typical smallpox eruption to the formation of crusts, which, on falling off, removed the hair with them. A cat, which was brought into one of the wards as a pet, went through a similar course of sickness, beginning about two weeks after its entrance. I examined both these animals repeatedly and am thoroughly convinced that both of them suffered from variola.

1344 Jackson Boulevard,
January, 1895.

Statistics of Municipal Smallpox Hospital: 1894.

Whole number of cases		2,332
Confluent and hemorrhagic	1,313	
Discrete	1,019	
		2,332
Recovered	1,686	
Deaths	646	
		2,332
Vaccinated at some time	1,238	
Not vaccinated at any time	1,094	
		2,332

Table showing percentage of males and females and mortality of each:

Sex.	Number.	Mortality.	Per cent.
Males..................	1,521	420	27.61
Females................	811	226	27.86
Mortality of the whole number....................			27.7

Of the 646 cases that died, 149 died of complications, such as pneumonia, acute nephritis, cerebral meningitis, pleurisy, hepatic abscesses, diphtheria, scarlet fever, erysipelas, enteritis, peritonitis and cerebral abscesses. Of these complications, pneumonia was the most frequent. A number of cases were admitted in a moribund condition. The mortality of uncomplicated cases of smallpox was 21.31 per cent.

Table showing mortality according to age of patients:

Age.	Number.	Mortality.	Per cent.
From 1 to 6 years......	648	265	40.89
" 7 " 15 "	259	44	16.98
" 15 " 25 "	469	119	25.37
" 25 " 35 "	542	128	23.08
Over 35 years	414	90	27.73

The following table shows the percentage of mortality of vaccinated and unvaccinated cases:

AGE.	Whole number treated.	Number vaccinated.	Number of vaccinated that died.	Mortality per cent.	Number not vaccinated.	Number of not vaccinated that died.	Mortality per cent.	Mortality per cent. both classes.
From 1 to 6............	648	64	8	12.5	584	257	44.	40.89
From 7 to 15...........	259	80	3	3.75	179	41	22.9	16.98
From 15 to 25..........	469	251	45	17.92	218	74	33.94	25.37
From 25 to 35..........	542	313	54	17.28	229	74	23.64	23.8
Over 35................	414	285	51	17.89	129	39	30.23	21.73
Totals and percentages	2332	993	161	16 21	1339	485	36.22	27.70

The following table shows the number of patients, admitted, discharged and died for each month during 1894:

MONTH.	Remaining from previous month.	Admitted.	Total.	Discharged.	Died.	Total.	Remaining.
January	38	176	214	72	24	96	118
February	118	219	337	133	50	183	154
March	154	276	430	199	81	280	150
April	150	321	471	178	74	252	219
May	219	518	737	281	157	438	299
June	299	191	490	287	83	370	120
July	120	82	202	115	32	147	55
August	55	112	167	67	40	107	60
September	60	82	142	58	24	82	60
October	60	105	165	66	30	96	69
November.........	69	120	189	106	17	123	66
December	66	130	196	74	34	108	88
Total	....	2332	....	1636	646	....	....

Besides the 2,332 patients, who received attention at the hospital, there were 306 mothers admitted with their children.

EXPLANATIONS OF THE FIGURES AT THE HEAD OF COLUMNS IN THE FOLLOWING TABLE:

1] The letter "M" means *male;* blank is *female.*

2] The letter "m" following figures means *months.*

3] The letter "S" means *single;* blank is *married.*

4] The letters in this column have the following meanings: "I" means vaccinated in *infancy;* "Ch" means vaccinated in *childhood.* Figures alone indicate other age (in *years*) of vaccination. Figures following the letters "I" and "Ch" indicate a *revaccination* and *age* when performed.

5] Where two countries are indicated in this column, the last is the country where *revaccination* was performed.

6] The letters in this column indicate the character of the *result* of the vaccination, as indicated by the scar—"G," good; "F," fair; "B," bad.

7] The letter "D" means *died;* blank is *recovery.*

EXAMPLES:—Case 1 was a male: 58 years of age; born in Canada; married; vaccinated in infancy, in Canada; had a fair vaccinal cicatrix; had discrete smallpox; was 16 days in hospital; recovered.

Case 4—a male; 33 years of age; born in England; single; vaccinated in childhood, in England; revaccinated in the United States during the same year of his attack; no result specified: had confluent smallpox; was 18 days in hospital; recovered.

Case 8—male; 28 years of age; born in the United States; single; never vaccinated; had confluent smallpox; died on the fourteenth day.

Case 12—female; 20 years of age; born in Germany; single; never vaccinated; had discrete smallpox; in hospital 39 days; recovered.

Case 45—male; 33 years of age; born in the United States; single; never vaccinated; had confluent smallpox; was moribund on admission—that is, he died within 24 hours after being received.

NOTE.—Where there is no entry in the column "*Days duration,*" it signifies that the patient was moribund and died within 24 hours after admission to hospital. There were 57 such cases.

TABULAR STATEMENT OF 2332 CASES OF SMALLPOX REMOVED TO AND TREATED IN THE MUNICIPAL HOSPITAL OF CHICAGO DURING THE YEAR 1894:

Showing the Sex, Age, Nativity, Social Status, Vaccinal History, Character of Attack, Duration of Illness and Result in each Case.

Number of Case.	Sex [1]	Age [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
1	M	58	Canada		I	Canada	F	Discrete	16	
2	M	43	Sweden		Ch	Sweden	F	Discrete	20	
3	M	36	Sweden	S	I	Sweden	G	Discrete	15	
4	M	33	England	S	Ch-33	England-U. S	....	Confluent	18	
5	M	59	United States		49	United States	G	Discrete	15	
6	M	35	Ireland	S	Ch	Ireland	G	Discrete	15	
7	M	22	Germany	S	Ch	Germany	G	Discrete	13	
8	M	28	United States	S	....	....	....	Confluent	14	D
9	M	32	England	S	I	England	B	Discrete	31	
10	M	23	Sweden	S	I	Sweden	G	Discrete	19	
11	M	32	Germany	S	Ch	Germany	G	Discrete	15	
12		20	Germany	S	....	....	....	Discrete	39	
13	M	28	Germany	S	I	Germany	F	Confluent	11	D
14	M	32	Germany		I	Germany	G	Discrete	27	
15	M	35	Sweden		Ch-29	Sweden-U. S	G	Discrete	21	
16	M	33	Sweden		Ch-30	Sweden-U. S	G	Discrete	12	
17	M	22	United States	S	....	....	....	Discrete	17	D
18	M	22	Sweden	S	Ch	Sweden	F	Confluent	27	
19		18m	Bohemian	S	....	....	....	Hemorrhagic	15	
20	M	34	Denmark	S	Ch	Denmark	G	Discrete	14	
21	M	10	Bohemia	S	Ch	United States	B	Discrete	40	
22	M	36	United States	S	....	....	....	Confluent	37	
23	M	29	Scotland	S	Ch	Scotland	....	Confluent	24	
24	M	48	United States	S	48	United States	G	Confluent	25	
25	M	39	United States	S	I-39	United States	F	Discrete	15	
26	M	39	Ireland	S	I	Ireland	F	Discrete	32	
27	M	34	United States	S	Ch	United States	F	Discrete	23	D
28	M	20	Germany	S	I-20	Germany-U. S	G	Discrete	13	
29	M	25	United States	S	25	United States	....	Confluent	17	D
30	M	26	United States	S	I	United States	B	Confluent	15	D
31	M	34	England	S	I	England	G	Discrete	20	
32	M	35	Ireland		....	....	....	Discrete	24	
33	M	39	Norway		I	Norway	F	Discrete	25	
34		3	United States	S	....	....	....	Confluent	24	
35	M	21	United States	S	....	....	....	Confluent	13	D
36		10	United States	S	I	United States	G	Discrete	10	
37		4	United States	S	....	....	....	Confluent	16	D
38	M	26	Canada	S	....	....	F	Coufluent	14	D
39	M	7	Ireland	S	....	....	....	Confluent	32	
40	M	28	Ireland	S	I	Ireland	G	Discrete	17	
41	M	31	Ireland	S	Ch-31	Ireland-U. S	G	Discrete	20	
42	M	30	Ireland	S	Ch-30	Ireland-U. S	G	Discrete	14	
43	M	29	United States	S	Ch-29	United States	G	Discrete	15	
44	M	39	United States	S	Ch-39	United States	G	Discrete	11	
45	M	33	United States	S	....	....	....	Confluent	....	D
46		11	United States	S	....	....	....	Discrete	27	

NOTE.—For the significance of the initial letters, figures, contractions, etc., in these columns, refer to *Explanations* preceding first page of TABULAR STATEMENT.

STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
47	M	40	Sweden	S	I	Sweden	F	Discrete	30	
48	M	28	Sweden	S	Ch-28	Sweden-U. S.	F	Confluent	24	
49	M	27	Sweden	S	I-27	Sweden-U. S.	F	Discrete	26	
50	M	21	Switzerland	S	Ch	Switzerland	G	Discrete	16	
51	M	29	United States	S	....	....	....	Confluent	....	D
52	M	22	Bohemia	S	Ch	Bohemia	F	Discrete	15	
53	M	49	Scotland	S	I	Scotland	B	Discrete	34	
54	M	5m	United States	S	....	....	....	Confluent	20	
55	M	40	United States	S	Ch	United States	F	Confluent	29	
56	M	39	United States	S	Ch	United States	F	Discrete	18	
57	M	17	United States	S	Ch	United States	F	Discrete	26	
58	M	2	United States	S	....	....	....	Discrete	16	
59	M	35	Ireland	S	25	Ireland-U. S.	F	Discrete	15	
60	M	....	Holland	S	Ch	Holland	B	Discrete	16	
61		....	United States	S	....	....	....	Confluent	9	D
62	M	40	England	S	I	England	F	Confluent	13	D
63	M	46	United States		Ch	United States	G	Discrete	17	
64	M	38	Canada	S	....	....	....	Confluent	14	D
65	M	24	Ireland	S	Ch	Ireland	G	Discrete	19	
66	M	10m	United States	S	....	....	....	Discrete	27	
67	M	7	United States	S	....	....	....	Discrete	19	
68		3	United States	S	....	....	....	Discrete	....	D
69	M	45	Ireland	S	I	Ireland	F	Discrete	19	D
70		40	Germany		Ch	Germany	F	Confluent	16	D
71	M	4	United States	S	....	....	....	Discrete	31	
72	M	2	United States	S	....	....	....	Discrete	12	
73	M	2m	United States	S	....	....	....	Discrete	10	D
74	M	5	United States	S	....	....	....	Discrete	15	
75	M	39	Ireland	S	Ch	Ireland	G	Confluent	17	
76	M	33	Ireland	S	Ch	Ireland	F	Confluent	37	
77	M	35	Norway	S	Ch	Norway	F	Confluent	38	
78	M	18	Germany	S	Ch	Germany	F	Discrete	18	
79	M	22	United States	S	....	....	....	Confluent	11	D
80	M	45	United States	S	Ch	United States	G	Discrete	12	
81	M	29	Germany	S	....	....	....	Confluent	9	D
82	M	23	United States	S	....	United States	....	Confluent	12	D
83	M	27	Germany	S	21	United States	G	Discrete	19	
84	M	29	Sweden	S	I	Sweden	G	Discrete	17	
85	M	37	Germany	S	I	Germany	B	Confluent	23	
86	M	25	United States	S	15	United States	G	Discrete	15	
87		32	Ireland	S	I	Ireland	B	Confluent	53	
88	M	22	United States	S	....	....	....	Discrete	47	
89	M	18	United States	S	....	....	....	Confluent	41	
90	M	32	United States		32	United States	F	Discrete	46	
91	M	57	United States	S	I	United States	B	Discrete	39	
92	M	42	United States	S	I	United States	....	Hemorrhagic	72	
93		22	United States	S	....	....	....	Hemorrhagic	....	D
94	M	13m	United States	S	....	....	....	Hemorrhagic	9	D
95		17	Poland	S	....	....	....	Confluent	10	D
96		4	Bohemia	S	....	....	....	Confluent	34	
97		31	Ireland	S	....	....	....	Confluent	32	
98		24	Sweden	S	....	....	....	Confluent	49	
99	M	21	United States	S	....	....	....	Hemorrhagic	8	D
100	M	33	Ireland	S	....	....	....	Confluent	48	D
101	M	23	United States	S	....	....	....	Confluent	67	
102	M	18	United States	S	....	....	....	Confluent	69	
103	M	33	United States	S	....	....	....	Discrete	31	
104	M	52	United States	S	....	....	....	Discrete	71	
105	M	28	Sweden	S	....	....	....	Discrete	41	
106	M	21	Ireland	S	Ch	Ireland	G	Discrete	10	
107	M	34	Germany	S	....	....	....	Confluent	31	
108	M	42	United States	S	27	United States	F	Discrete	27	

NOTE.—For the significance of the initial letters, figures, contractions, etc., in these columns, refer to *Explanations* preceding first page of TABULAR STATEMENT.

STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
109	M	34	Ireland	S	....	....	....	Discrete	27	
110		35	United States	S	....	....	....	Hemorrhagic	8	D
111	M	33	Germany	S	....	....	....	Discrete	31	
112	M	36	Ireland	S	....	....	....	Discrete	30	
113	M	41	United States	S	....	....	....	Discrete	31	
114	M	36	United States	S	....	....	....	Confluent	14	D
115	M	17	Germany	S	....	....	....	Confluent	28	
116		16	Poland	S	....	....	....	Confluent	29	
117	M	48	United States	S	....	....	....	Confluent	11	D
118	M	34	Ireland	S	....	....	....	Discrete	13	
119	M	28	United States	S	....	....	....	Hemorrhagic	9	D
120	M	28	United States	S	....	....	....	Discrete	35	
121	M	33	Ireland	S	....	....	....	Discrete	36	
122	M	31	Sweden	S	....	....	....	Discrete	21	
123	M	25	Norway	S	....	....	....	Confluent	10	D
124	M	28	England	S	Ch	....	....	Confluent	23	
125	M	31	United States	S	Ch	....	....	Discrete	21	
126	M	48	England	S	Ch	....	....	Discrete	23	
127	M	27	United States	S	Ch	....	....	Discrete	56	
128	M	40	Ireland	S	Ch	....	....	Discrete	23	
129		24	Germany	S	....	....	....	Confluent	39	
130	M	33	United States	S	....	....	....	Confluent	10	D
131	M	48	United States	S	Ch	United States	G	Confluent	9	D
132	M	27	Germany	S	Ch	Germany	....	Hemorrhagic	9	D
133	M	7	Ireland	S	....	....	....	Discrete	22	
134	M	52	Germany	S	....	....	....	Discrete	22	
135	M	26	Ireland	S	....	....	....	Discrete	30	
136	M	32	Sweden	S	....	....	....	Discrete	26	
137	M	23	Germany	S	Ch	Germany	....	Confluent	15	D
138	M	19	Sweden	S	Ch	....	....	Confluent	15	D
139		7	United States	S	....	....	....	Discrete	18	
140	M	21	Germany	S	Ch	....	....	Discrete	17	
141	M	31	Denmark	S	....	....	....	Discrete	21	
142		30	Ireland	S	Ch	....	....	Discrete	12	
143		32	England	S	....	....	....	Discrete	35	
144	M	35	United States	S	....	....	....	Discrete	19	
145	M	31	Ireland	S	Ch	....	....	Discrete	15	
146	M	38	United States	S	32	....	....	Confluent	14	
147	M	20	United States	S	....	....	....	Discrete	9	
148	M	30	England	S	Ch	....	....	Discrete	12	
149	M	34	Germany	S	32	....	....	Discrete	28	
150	M	33	United States	S	Ch	....	....	Discrete	19	
151	M	27	United States	S	....	....	....	Hemorrhagic	11	D
152		23	United States	S	....	....	....	Discrete	13	D
153	M	29	Ireland	S	Ch	....	....	Discrete	19	
154	M	18	United States	S	Ch	....	....	Discrete	12	
155	M	56	Scotland	S	Ch	....	....	Discrete	30	
156		36	France	S	Ch	....	....	Discrete	23	
157	M	35	Ireland	S	Ch	....	....	Discrete	18	
158	M	42	Norway	S	....	....	....	Discrete	16	
159	M	37	Ireland	S	....	....	....	Discrete	10	
160	M	40	Germany	S	....	....	....	Discrete	21	
161	M	29	United States	S	....	....	....	Discrete	14	
162	M	32	Sweden	S	....	....	....	Discrete	18	
163		40	United States	S	....	....	....	Confluent	21	
164	M	4	United States	S	....	....	....	Confluent	19	D
165		8	United States	S	I	United States	....	Discrete	29	
166	M	8	United States	S	Ch	....	....	Discrete	30	
167		25	United States	S	....	....	....	Discrete	19	
168		32	Sweden	S	....	....	....	Confluent	....	D
169	M	27	Sweden	S	....	....	....	Hemorrhagic	15	
170	M	48	United States	S	48	United States	G	Discrete	28	

NOTE.—For the significance of the initial letters, figures, contractions, etc., in these columns, refer to *Explanations* preceding first page of TABULAR STATEMENT.

STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED. When. [4]	Where. [5]	Result. [6]	CHARACTER OF ATTACK.	Days duration.	[7] Result.
171	M	13	United States	S	I	United States	....	Discrete	24	
172	M	9	United States	S	I	United States	....	Discrete	24	
173		5	United States	S	I	United States	....	Discrete	23	
174		10m	Arabia	S	....	....	....	Discrete	42	
175	M	36	Ireland	S	I	Ireland	....	....	....	D
176	M	19	Sweden	S	....	....	....	Discrete	14	
177	M	33	Ireland	S	....	....	....	Discrete	21	
178		4	United States	S	....	....	....	Discrete	13	
179	M	45	Ireland	S	....	....	....	Confluent	20	D
180		7	United States	S	....	....	....	Discrete	21	
181	M	22	Germany	S	....	....	....	Confluent	12	D
182	M	44	Norway	S	Ch	Norway	F	Confluent	49	D
183		3	United States	S	....	....	....	Discrete	13	
184		23	Ireland		....	....	....	Confluent	30	
185	M	33	United States	S	26	United States	G	Confluent	28	
186		5	United States	S	....	....	....	Discrete	16	
187	M	34	United States	S	Ch	United States	G	Discrete	15	
188	M	39	Norway		Ch	Norway	F	Discrete	13	
189	M	33	United States	S	....	....	....	Confluent	8	D
190	M	52	Ireland	S	I	Ireland	....	Discrete	10	D
191	M	32	Sweden	S	Ch	Sweden	G	Discrete	18	
192	M	47	United States	S	Ch–47	United States	G	Discrete	16	
193	M	10m	Bohemia	S	....	....	....	Discrete	11	D
194	M	24	United States	S	....	....	....	Hemorrhagic	8	D
195	M	26	Ireland	S	Ch	Ireland	B	Confluent	47	
196	M	22	United States	S	17	United States	G	Discrete	16	
197	M	19	United States	S	I	United States	F	Confluent	44	
198	M	35	Sweden	S	I	Sweden	F	Discrete	44	
199	M	6	United States	S	....	....	....	Discrete	25	
200	M	30	Sweden	S	Ch	Sweden	G	Discrete	16	
201	M	36	Denmark	S	Ch	Denmark	F	Discrete	22	
202	M	30	United States	S	....	....	....	Confluent	....	D
203	M	24	United States	S	....	....	....	Discrete	16	D
204	M	40	United States	S	....	....	....	Discrete	11	D
205		24	Sweden	S	I	Sweden	G	Discrete	15	
206	M	29	United States	S	....	....	....	Discrete	40	
207	M	23	United States	S	23	United States	G	Discrete	11	
208		5	United States	S	....	....	....	Discrete	23	
209	M	41	United States	S	Ch	United States	G	Discrete	13	
210	M	33	England	S	25	United States	....	Confluent	41	
211	M	23	United States	S	Ch	United States	....	Confluent	11	D
212	M	15m	United States	S	....	....	....	Confluent	27	
213		26	Ireland		Ch	Ireland	G	Discrete	19	
214	M	32	United States		....	....	....	Confluent	11	D
215	M	1	United States	S	....	....	....	Discrete	9	D
216		3	United States	S	....	....	....	Hemorrhagic	11	D
217	M	43	Germany		I-38	....	....	Hemorrhagic	12	D
218		15	Germany	S	I	Germany	F	Discrete	26	
219	M	31	United States	S	Ch	United States	G	Discrete	20	
220	M	28	Ireland	S	I	Ireland	G	Discrete	18	
221	M	36	Denmark	S	I	Denmark	G	Discrete	20	
222		26	United States	S	....	....	....	Confluent	12	D
223	M	39	United States	S	Ch	....	....	Confluent	6	D
224	M	19	United States	S	....	....	....	Confluent	10	D
225	M	27	Ireland	S	26	United States	....	Discrete	65	
226	M	25	Sweden	S	I	Sweden	F	Discrete	38	
227	M	25	United States	S	14	United States	B	Confluent	23	D
228	M	22	United States	S	....	....	....	Discrete	11	D
229		55	Poland		I	Poland	F	Discrete	26	
230	M	37	United States	S	17	United States	G	Discrete	19	
231	M	37	Ireland		I	Ireland	G	Discrete	18	
232	M	12	Poland	S	I	Poland	G	Discrete	18	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
233	M	30	United States		....	....	....	Discrete	47	
234	M	49	Ireland	S	I	Ireland	F	Discrete	36	
235	M	24	United States	S	24	United States	F	Discrete	17	
236	M	24	Norway	S	I	Norway	F	Discrete	14	
237	M	23	United States	S	Ch	United States	F	Discrete	16	
238	M	32	England	S	....	....	....	Confluent	28	
239	M	18	United States	S	....	....	....	Discrete	8	D
240	M	30	Sweden	S	I	Sweden	F	Discrete	21	
241		38	United States		I	United States	F	Discrete	14	
242	M	46	Sweden	S	I	Sweden	F	Discrete	30	
243	M	30	United States	S	....	....	....	Discrete	39	
244	M	19	United States	S	....	....	....	Discrete	31	D
245		8	United States	S	Ch	United States	G	Discrete	30	
246		5	United States	S	Ch	United States	F	Discrete	30	
247	M	34	Sweden	S	....	....	....	Discrete	12	
248	M	26	United States	S	Ch	United States	G	Confluent	11	D
249	M	26	United States	S	I	United States	B	Discrete	7	D
250		28	Ireland		I	Ireland	G	Discrete	15	
251	M	34	United States	S	Ch	United States	G	Discrete	17	
252	M	33	United States		....	....	....	Confluent	31	
253	M	11m	United States	S	....	....	....	Discrete	18	D
254	M	21	Germany	S	21	United States	....	Discrete	45	
255	M	29	United States	S	I	United States	B	Discrete	15	
256	M	22	Ireland	S	I	Ireland	B	Confluent	9	D
257	M	42	Ireland	S	....	....	....	Discrete	16	
258	M	25	United States	S	I	United States	F	Discrete	53	
259	M	44	United States	S	I-44	United States	F	Discrete	26	
260	M	23	Ireland	S	I	Ireland	G	Discrete	47	
261		3	United States	S	....	....	....	Confluent	7	D
262		20	United States	S	....	....	....	Discrete	12	D
263	M	25	United States	S	Ch	United States	F	Discrete	10	
264	M	37	Denmark		I-25	Denmark-U. S.	G	Discrete	17	
265	M	23	Ireland	S	....	....	....	Confluent	42	
266	M	27	United States	S	....	....	....	Confluent	37	
267	M	45	Germany	S	I	Germany	F	Discrete	12	
268	M	23	United States	S	....	....	....	Discrete	12	D
269	M	27	Sweden	S	I	Sweden	B	Discrete	22	
270	M	33	United States	S	13	United States	F	Discrete	23	
271	M	32	United States	S	15	United States	G	Discrete	29	
272	M	32	United States	S	....	....	....	Confluent	32	
273		4	United States	S	....	....	....	Discrete	43	
274	M	62	United States		Ch	United States	....	Discrete	17	
275	M	28	United States	S	I	United States	B	Discrete	17	
276	M	12	United States	S	....	....	....	Discrete	48	
277		26	United States	S	....	....	....	Discrete	16	D
278	M	69	United States		51	United States	G	Discrete	22	
279	M	18m	United States	S	....	....	....	Discrete	24	
280	M	24	Sweden	S	I	Sweden	G	Discrete	9	
281	M	29	United States	S	29	United States	G	Discrete	12	
282	M	27	Ireland	S	I-27	Ireland-U. S	G	Discrete	12	
283	M	11	Bohemia	S	Ch	....	....	Discrete	13	
284	M	30m	United States	S	....	....	....	Discrete	8	D
285		5	United States	S	....	....	....	Confluent	11	D
286	M	37	United States		I-37	United States	G	Discrete	20	
287	M	45	Sweden		I-42	Sweden-U. S.	G	Discrete	15	
288	M	21	Ireland	S	I	Ireland	G	Discrete	14	
289	M	39	Sweden	S	131	Sweden-U. S	G	Discrete	19	
290	M	24	United States	S	....	....	....	Discrete	25	
291	M	42	Sweden	S	....	....	....	Confluent	31	
292	M	25	England	S	....	....	....	Discrete	17	
293	M	48	United States	S	....	....	....	Discrete	14	
294	M	38	United States	S	....	....	....	Discrete	10	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED. When. [4]	Where. [5]	Result. [6]	CHARACTER OF ATTACK.	Days duration.	Result. [7]
295	M	26	United States	S	....	....	....	....	....	D
296	M	33	United States	S	Ch	United States....	F	Discrete	12	
297	M	36	England.....	S	Ch-34	England-U. S....	G	Discrete	11	
298		19	Germany.....		I	Germany.........	G	Discrete	9	
299	M	12	United States	S	Ch	United States....	F	Discrete	17	
300	M	13	United States	S	....	....	....	Confluent	28	
301	M	20	Bohemia	S	....	....	....	Confluent	13	D
302	M	24	Germany.....	S	I	Germany.........	F	Discrete	14	
303	M	32	United States	S	I	United States....	F	Discrete	12	
304	M	45	United States	S	Ch	United States....	....	Confluent	42	
305		22	United States	S	....	....	....	Discrete	28	
306	M	32	Sweden	S	I	Sweden	G	Discrete	25	
307	M	6	United States	S	I	United States....	F	Discrete	12	
308	M	3m	United States	S	I	United States....	....	Discrete	9	
309	M	48	United States	S	I	United States....	B	Discrete	7	
310	M	15m	United States	S	I	United States....	F	Discrete	15	
311	M	30	Norway	S	I	Norway	F	Discrete	12	
312		3	United States	S	....	....	....	Discrete	10	
313	M	38	Germany.....	S	....	....	....	Confluent	26	D
314	M	28	United States		....	....	....	Confluent	37	
315	M	22	United States	S	Ch	United States....	B	Discrete	6	
316	M	45	Switzerland..	S	I	....	....	Discrete	30	
317		15m	United States	S	....	....	....	Discrete	26	
318	M	25	United States	S	....	....	....	Confluent	27	D
319	M	16	Canada.......	S	....	....	....	Confluent	18	D
320	M	7	United States	S	Ch	....	....	Discrete	30	
321		22	England		I	England..........	G	Discrete	46	
322		20	Bohemia	S	....	....	....	Discrete	23	
323	M	35	United States		Ch	United States....	G	Discrete	14	
324	M	25	United States		Ch	....	G	Discrete	21	
325		21	Poland	S	....	....	....	Confluent	9	D
326	M	34	China		....	....	....	Confluent	9	D
327		9	United States	S	....	....	....	Discrete	11	
328	M	1m	United States	S	....	....	....	Discrete	21	
329	M	50	Holland	S	....	....	....	Discrete	17	
330	M	33	United States	S	....	....	....	Discrete	19	
331		24	United States		....	....	....	Confluent	42	D
332	M	8	United States	S	....	....	....	Confluent	39	
333	M	48	United States	S	Ch	United States....	F	Discrete	10	
334	M	32	United States	S	Ch	United States....	G	Discrete	24	
335	M	34	United States	S	I	United States....	B	Discrete	20	
336	M	24	United States	S	Ch	....	....	Discrete	39	
337		21	Germany.....	S	Ch	Germany	F	Discrete	28	
338	M	27	England		I	England..........	G	Discrete	10	
339		27	United States	S	Ch	United States....	....	Discrete	28	
340	M	30	Ireland.......	S	I	Ireland...........	G	Discrete........	14	
341		35	United States		Ch	United States....	B	Discrete........	17	D
342		24	United States		Ch-15	United States....	F	Confluent.......	25	
343	M	42	Germany.....	S	I	Germany.........	G	Discrete........	16	
344	M	44	Germany.....	S	I	Germany.........	G	Discrete........	22	
345	M	22	Canada......	S	I 15	Canada	G	Discrete........	40	
346	M	24	United States	S	18	United States....	....	....	....	D
347	M	40	England	S	I	England..........	F	Confluent.......	6	D
348	M	19	Ireland.......	S	....	....	....	Discrete	14	
349	M	10	United States	S	....	....	....	Discrete	16	
350		5	Poland.. ...	S	....	....	....	Discrete	21	D
351	M	29	Canada.. ...	S	....	....	....	Discrete	11	
352	M	36	United States	S	Ch	United States....	G	Discrete........	24	
353	M	18	United States	S	I	United States....	....	Discrete........	49	
354	M	45	Switzerland..	S	I	Switzerland......	B	Discrete........	41	
355	M	35	Ireland.......	S	135	Ireland...........	G	Discrete........	24	
356		25	United States		Ch 25	United States....	G	Discrete........	14	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED. When. [4]	VACCINATED. Where. [5]	VACCINATED. Result. [6]	CHARACTER OF ATTACK.	Days duration.	Result. [7]
357	M	5	United States	S	....	....	...	Discrete	18	
358		22	United States		....	....	...	Discrete	19	
359		13m	United States	S	....	....	...	Hemorrhagic	28	D
360	M	28	United States	S	15	United States	F	Confluent	28	
361	M	36	Ireland	S	....	....	...	Confluent	36	
362		8	United States	S	....	....	...	Discrete	11	
363	M	48	Germany	S	Ch	Germany	F	Discrete	9	
364	M	5	United States	S	....	....	...	Confluent	8	D
365	M	39	Germany	S	Ch	Germany	F	Discrete	17	
366		2	United States	S	I	United States	B	Discrete	20	
367		6	United States	S	....	....	...	Discrete	38	
368	M	33	United States		Ch	United States	G	Discrete	25	
369		18m	Bohemia	S	....	....	...	Discrete	15	D
370	M	34	Denmark	S	Ch	Denmark	G	Discrete	14	
371	M	10	Bohemia	S	Ch	United States	B	Discrete	40	
372	M	36	United States	S	....	....	...	Confluent	37	
373	M	29	Scotland	S	Ch	Scotland	...	Confluent	24	
374		7	United States	S	....	....	...	Discrete	11	
375		23	Sweden		....	....	...	Discrete	15	
376	M	33	Sweden	S	....	....	...	Discrete	34	
377		33	Germany		I	....	G	Discrete	8	
378	M	32	United States		....	....	...	Discrete	38	
379	M	28	United States	S	....	....	...	Discrete	9	
380	M	48	United States		Ch	United States	G	Confluent	11	D
381		48	Germany		....	....	...	Confluent	34	
382		50	Germany		....	....	...	Discrete	14	
383		3	United States	S	....	....	...	Confluent	28	
384		5	United States	S	....	....	...	Discrete	11	
385		38	England		....	....	...	Confluent	35	
386	M	31	United States	S	....	....	...	Discrete	15	
387	M	25	United States		....	....	...	Discrete	20	
388		21	Sweden	S	Ch	Sweden	F	Discrete	20	
389	M	32	United States	S	Ch	United States	G	Discrete	17	
390		32	Sweden	S	....	....	...	Discrete	25	
391	M	39	Germany	S	....	....	...	Discrete	12	
392	M	40	United States		....	....	...	Confluent	14	D
393	M	26	Sweden	S	....	....	...	Discrete	6	
394	M	27	United States	S	....	....	...	Confluent	15	D
395	M	28	United States	S	....	....	...	Confluent	31	
396	M	34	United States		....	....	...	Discrete	12	
397	M	25	United States	S	....	....	...	Discrete	41	
398	M	3	United States	S	I	United States	F	Discrete	6	
399		5	United States	S	....	....	...	Discrete	7	
400		14	United States	S	....	....	...	Discrete	9	
401	M	2	United States	S	....	....	...	Confluent	12	D
402	M	29	United States	S	....	....	...	Discrete	12	
403	M	32	Poland		....	....	...	Discrete	10	
404	M	21	Sweden	S	I	Sweden	G	Discrete	9	
405	M	20	United States	S	....	....	...	Confluent	13	
406	M	60	United States	S	....	....	...	Discrete	12	
407	M	39	United States	S	....	....	...	Discrete	16	
408	M	35	United States	S	....	....	...	Discrete	13	
409	M	24	Ireland	S	....	....	...	Discrete	16	
410	M	45	Ireland	S	Ch	Ireland	F	Discrete	12	
411	M	19	Ireland	S	....	....	...	Discrete	13	
412	M	18	United States	S	....	....	...	Discrete	46	
413		35	France		....	....	...	Confluent	10	D
414	M	36	Bohemia	S	....	....	...	Confluent	33	
415	M	43	Denmark	S	....	....	...	Discrete	14	
416	M	26	Canada	S	....	....	...	Confluent	10	D
417	M	36	Canada	S	....	....	...	Confluent	19	
418	M	35	United States	S	....	....	...	Confluent	13	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED,			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
419	M	26	United States	S	....	....	....	Discrete	7	
420	M	22	Germany	S	....	Denmark	....	Confluent	12	
421		....	....	S	....	....	....	....	....	D
422	M	4	United States	S	....	....	....	Discrete	12	
423	M	3	United States	S	....	....	....	Discrete	11	
424	M	4	United States	S	....	....	....	....	7	D
425		5	United States	S	....	....	....	Discrete	11	
426	M	25	United States	S	Ch	United States	G	Discrete	18	D
427	M	41	United States	S	21	United States	B	Discrete	46	
428	M	62	Norway	S	Ch	Norway	B	Discrete	17	D
429	M	29	Sweden	S	....	....	....	Discrete	15	
430	M	19	United States	S	16	United States	G	Confluent	13	D
431	M	16m	United States	S	....	....	....	Confluent	12	D
432	M	32	Switzerland	S	Ch	Switzerland	G	Discrete	16	
433	M	32	United States	S	Ch–31	United States	....	Discrete	8	
434	M	29	United States	S	15	United States	G	Discrete	15	
435	M	40	United States	S	18	....	....	Discrete	11	
436	M	48	Ireland	S	18	....	....	Discrete	15	
437	M	32	United States	S	30	United States	G	Discrete	14	
438	M	42	United States	S	I	United States	G	Discrete	14	D
439	M	4	United States	S	....	....	....	Confluent	27	
440	M	23	United States	S	....	....	....	Discrete	10	
441		19	United States	S	Ch–19	United States	G	Discrete	9	
442	M	9	United States	S	Ch	United States	B	Confluent	36	
443	M	24	United States	S	Ch	United States	G	Confluent	23	
444	M	35	Poland	S	21–28	Poland	....	Discrete	12	
445	M	49	Sweden	S	Ch	Sweden	F	Confluent	16	D
446	M	34	United States	S	Ch	United States	G	Discrete	15	
447		24	Bohemia	S	....	....	....	Discrete	28	
448	M	27	Germany	S	I–12	Germany	F	Discrete	13	
449	M	3	United States	S	....	....	....	Discrete	23	
450		7	United States	S	Ch	United States	....	Discrete	24	
451	M	5	United States	S	....	....	....	Confluent	38	D
452	M	35	Germany	S	I–22	Germany	F	Discrete	24	
453	M	5	United States	S	....	....	....	Discrete	26	
454		28	Ireland	S	I–12	Ireland	G	Discrete	10	
455	M	27	United States	S	....	....	....	Hemorrhagic	....	D
456	M	28	United States	S	....	....	....	Discrete	24	
457	M	40	England	S	I	England	G	Discrete	11	
458	M	42	Ireland	S	Ch	Ireland	G	Discrete	16	
459		51	United States	S	18–48	United States	G	Discrete	22	
460	M	46	United States	S	I–15	United States	B	Confluent	25	
461	M	21	United States	S	....	....	....	Confluent	15	D
462		76	Germany	S	....	....	....	Confluent	15	D
463	M	55	Germany	S	Ch–55	Germany U. S.	G	Confluent	21	
464	M	31	England	S	25	....	....	Discrete	31	
465	M	33	Ireland	S	I–21	Ireland	G	Discrete	34	
466	M	44	Ireland	S	Ch	Ireland	F	Discrete	37	
467	M	4	Poland	S	....	....	....	Discrete	22	
468		7	Poland	S	....	....	....	Discrete	27	
469	M	40	United States	S	Ch	United States	G	Discrete	32	
470	M	14	Poland	S	....	....	....	Discrete	21	
471	M	27	United States	S	....	....	....	....	....	D
472		21	Poland	S	....	....	....	Discrete	7	
473	M	25	Sweden	S	Ch	Sweden	F	Discrete	15	
474	M	28	Sweden	S	I	Sweden	G	Discrete	12	
475	M	5	United States	S	Ch	United States	G	Confluent	12	D
476	M	48	Norway	S	I–27	Norway-U. S.	G	Discrete	27	
477	M	19	United States	S	....	....	....	Confluent	34	
478	M	34	Sweden	S	Ch–12	Sweden	G	Discrete	17	
479	M	26	United States	S	29	United States	F	Discrete	29	
480		4	United States	S	Ch	United States	....	Confluent	31	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
481	M	10	United States	S	....	....	....	Confluent	28	
482	M	11	United States	S	Ch	United States	G	Discrete	14	
483	M	33	United States	S	I-13	United States	F	Discrete	13	
484	M	21	United States	S	....	....	....	Confluent	37	
485		22	Canada	S	Ch	Canada	G	Discrete	29	
486		54	United States	S	....	....	....	Confluent	11	D
487	M	53	Ireland	S	....	....	....	Confluent	11	D
488	M	20	United States	S	....	....	....	Confluent	13	D
489	M	30	United States	S	....	....	....	Confluent	13	D
490	M	35	Uhited States	S	Ch	United States	G	Confluent	....	D
491	M	70	United States	S	....	....	....	Confluent	21	D
492	M	4m	United States	S	....	....	....	Confluent	10	D
493		8	United States	S	....	....	....	Confluent	12	D
494	M	26	United States	S	Ch-26	United States	G	Discrete	14	
495		5	United States	S	Ch	United States	G	Confluent	20	D
496		34	Germany	S	Ch-14	Germany	G	Discrete	23	
497	M	4	United States	S	....	....	D	Confluent	24	
498	M	35	Ireland	S	I	Ireland	....	Discrete	13	
499	M	39	Ireland	S	Ch-24	Ireland-U. S.	G	Confluent	26	
500	M	4	United States	S	....	....	....	Confluent	10	D
501		15	United States	S	Ch	United States	G	Confluent	39	
502	M	28	Sweden	S	Ch	Sweden	G	Discrete	11	
503	M	18	Norway	S	Ch-18	Norway-U. S.	G	Discrete	18	
504	M	20	United States	S	Ch	United States	G	Confluent	13	D
505		20	United States	S	Ch-20	United States	G	Confluent	7	D
506	M	27	United States	S	Ch	United States	G	Discrete	30	
507	M	20	United States	S	18	United States	G	Confluent	12	D
508		6	United States	S	....	....	....	Discrete	17	
509	M	8	England	S	Ch	England	B	Discrete	22	
510		5	Sweden	S	Ch	Sweden	B	Discrete	28	
511		19	Germany	S	I-18	Germany	G	Discrete	6	
512	M	54	United States	S	Ch	United States	G	Discrete	15	
513	M	36	United States	S	....	....	....	Discrete	....	
514	M	29	United States	S	Ch	United States	G	Discrete	17	
515	M	32	Scotland	S	Ch	Scotland	G	Discrete	29	
516	M	40	United States	S	I	United States	F	Discrete	33	
517	M	21	United States	S	....	....	...	Confluent	19	D
518	M	2	United States	S	....	....	....	....	....	D
519	M	27	United States	S	....	....	....	Confluent	12	D
520		19m	United States	S	....	....	....	Hemorrhagic	13	D
521	M	23	Ireland	S	Ch	Ireland	G	Discrete	11	
522	M	6	United States	S	....	....	....	Confluent	10	D
523	M	35	United States	S	Ch	United States	G	Discrete	20	
524	M	4	United States	S	....	....	...	Discrete	10	D
525	M	10	United States	S	....	....	....	Discrete	22	
526		2	United States	S	....	....	....	Hemorrhagic	8	D
527	M	24	Ireland	S	Ch	Ireland	G	Discrete	15	
528	M	16	United States	S	....	....	....	Confluent	44	
529		2	United States	S	....	....	....	Confluent	15	
530	M	22	United States	S	....	....	....	Discrete	26	
531	M	3m	United States	S	....	....	....	Confluent	17	D
532	M	29	England	S	Ch	England	G	Discrete	76	
533	M	24	United States	S	Ch	United States	G	Confluent	9	D
534	M	2	United States	S	....	....	....	Discrete	26	
535		8	United States	S	....	....	....	Confluent	30	
536	M	28	Poland	S	Ch-12	Poland	G	Discrete	59	
537	M	23	United States	S	....	....	....	Confluent	16	D
538	M	17	United States	S	Ch-12	United States	G	Discrete	22	
539	M	8	United States	S	....	....	....	....	....	D
540	M	15	United States	S	....	....	...	Confluent	31	
541	M	35	Scotland	S	1	Scotland	G	Discrete	7	D
542	M	24	United States	S	Ch	United States	G	Confluent	33	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
543	M	55	United States	S	Ch 33	United States	....	Discrete	21	
544		4	United States	S	....	....	....	Discrete	16	
545	M	45	United States	S	Ch-18	....	G	Discrete	14	
546	M	35	United States	S	Ch	United States	G	Discrete	78	
547	M	30	Sweden	S	Ch	Sweden	G	Discrete	9	
548	M	29	United States	S	18	United States	B	Discrete	13	
549	M	25	United States	S	Ch-25	United States	G	Discrete	16	
550	M	6	United States	S	....	....	....	Hemorrhagic	10	D
551		8	Bohemia	S	....	....	....	Confluent	31	
552	M	27	Norway	S	Ch	Norway	G	Discrete	13	
553	M	35	United States	S	Ch-19	United States	G	Discrete	26	
554	M	18m	United States	S	....	....	....	Confluent	27	D
555	M	20	Germany	S	....	....	....	Discrete	32	
556		32	United States	S	Ch	United States	G	Discrete	13	
557	M	25	France	S	I	France	G	Discrete	14	
558		25	United States	S	....	....	....	Confluent	11	D
559		40	Ireland	S	....	....	....	Confluent	17	D
560	M	22	United States	S	Ch	United States	G	Confluent	11	D
561	M	18	United States	S	17	United States	G	Discrete	47	
562	M	28	Sweden	S	I-25	Sweden-U. S	G	Discrete	19	
563	M	24	United States	S	....	....	....	Confluent	14	D
564	M	50	United States	S	15	United States	G	Confluent	14	D
565	M	23	United States	S	....	....	....	Confluent	14	D
566	M	20	United States	S	....	....	....	Confluent	33	D
567	M	22	United States	S	....	....	....	Confluent	10	D
568		25	Holland		I	Holland	G	Discrete	16	
569		75	Bohemia	S	....	....	....	Confluent	8	D
570	M	12	United States	S	....	....	....	Discrete	23	
571		25	Ireland		Ch	....	....	Confluent	44	
572	M	25	United States	S	18	United States	G	Discrete	12	
573	M	3	United States	S	....	....	....	Discrete	19	
574		36	United States	S	Ch	United States	G	Discrete	28	
575	M	19	United States	S	19	United States	G	Confluent	35	
576	M	25	United States	S	Ch-25	United States	G	Discrete	17	D
577	M	33	Ireland	S	Ch-15	Ireland	G	Discrete	7	
578	M	31	United States	S	Ch	United States	G	Discrete	34	
579	M	4m	United States	S	....	....	....	Discrete	34	
580		22	United States		Ch	....	....	Confluent	33	
581	M	5m	United States	S	....	....	....	Confluent	9	D
582	M	30m	United States	S	....	....	....	....	....	D
583	M	2w	United States	S	....	....	....	Confluent	11	D
584		5	United States	S	....	....	....	Discrete	26	
585	M	31m	United States	S	....	....	....	Discrete	19	
586	M	18	United States	S	Ch	United States	G	Discrete	10	D
587	M	27	Denmark	S	Ch	....	....	Discrete	11	
588	M	31	United States	S	Ch	United States	G	Discrete	29	
589	M	18	United States	S	....	....	....	Confluent	11	D
590	M	28	United States	S	....	....	....	Discrete	15	
591	M	12	United States	S	....	....	....	Confluent	33	
592		4	United States	S	....	....	....	Discrete	17	
593	M	38	England	S	I-38	England-U. S.	G	Discrete	15	
594	M	22	United States	S	I	United States	G	Discrete	67	
595	M	40	Bohemia	S	Ch-38	Bohemia-U. S.	G	Discrete	14	
596		36	United States	S	....	....	....	Discrete	23	
597	M	29	United States	S	Ch	United States	G	Confluent	35	
598		2	United States	S	....	....	....	Confluent	21	D
599	M	40	Ireland	S	Ch	Ireland	G	Confluent	26	
600	M	26	United States	S	22	United States	G	Discrete	51	
601	M	30	United States	S	15-30	United States	G	Discrete	18	
602	M	22	United States	S	....	....	....	Confluent	11	D
603	M	25	United States	S	Ch	United States	G	Discrete	12	
604		24	Bohemia	S	....	....	....	Hemorrhagic	....	D

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
605	M	42	Ireland	S	I	Ireland	G	Discrete	19	
606		2	United States	S	....	....	....	Confluent	12	D
607		22	Sweden	S	I	Sweden	G	Discrete	14	
608	M	27	United States	S	....	....	....	Confluent	....	D
609	M	29	Sweden	S	Ch	Sweden	G	Discrete	14	
610	M	39	United States	S	Ch	United States	G	Discrete	17	
611	M	17	United States	S	....	....	....	Confluent	18	D
612	M	42	United States	S	12	United States	G	Discrete	30	
613	M	30	United States	S	....	....	....	Confluent	14	D
614	M	28	United States	S	Ch	United States	G	Discrete	37	D
615	M	22	Sweden	S	Ch	Sweden	G	Discrete	12	
616	M	22	United States	S	....	United States	....	Confluent	17	D
617	M	40	United States	S	Ch	United States	G	Discrete	49	
618	M	3	United States	S	....	....	....	Discrete	13	
619	M	46	Germany	S	Ch	Germany	G	Confluent	25	
620	M	5	United States	S	....	....	....	Confluent	31	
621		5m	United States	S	....	....	....	Discrete	13	
622	M	39	United States		Ch	United States	G	Confluent	8	D
623	M	22	Ireland	S	Ch	Ireland	G	Confluent	10	D
624	M	22	Bohemia		Ch	Bohemia	B	Confluent	10	D
625		49	Germany		....	....	....	Discrete	14	
626		40	Germany		Ch	Germany	F	Discrete	18	
627	M	70	United States	S	....	....	....	Discrete	15	
628	M	17	Ireland	S	....	....	....	Discrete	32	D
629	M	4	United States	S	....	....	....	Confluent	20	D
630	M	42	Bohemia		Ch	....	....	Confluent	29	
631	M	23	Ireland	S	I	Ireland	G	Discrete	11	
632	M	22	Ireland	S	Ch	Ireland	F	Discrete	11	
633	M	38	Germany	S	Ch	Germany	G	Discrete	32	
634	M	23	United States	S	....	....	....	Confluent	14	D
635	M	23	United States		16	United States	F	Discrete	40	
636	M	50	Ireland		....	....	....	Discrete	14	
637	M	34	United States		....	....	....	Confluent	2	D
638	M	19	United States	S	....	....	....	Confluent	41	
639	M	23	United States	S	....	....	....	Confluent	39	D
640	M	14	United States	S	Ch	United States	F	Hemorrhagic	3	D
641		4	Bohemia	S	....	....	....	Discrete	18	
642		43	Bohemia		Ch	Bohemia	F	Discrete	24	
643	M	2	Bohemia	S	....	....	....	Confluent	24	
644	M	42	England	S	Ch	England	F	Discrete	14	
645		22	Norway	S	Ch	Norway	F	Discrete	11	
646	M	18	Germany	S	14	Germany	F	Confluent	36	
647	M	53	Norway		I	Norway	F	Confluent	17	
648	M	39	United States		19	United States	F	Discrete	10	
649	M	21	Canada	S	14	Canada	G	Confluent	45	
650		43	Sweden	S	Ch	Sweden	F	Discrete	11	
651	M	26	Sweden		Ch	Sweden	F	Confluent	36	
652	M	29	Ireland	S	27	United States	F	Discrete	10	
653	M	39	Norway	S	Ch-29	Norway	....	Confluent	25	
654	M	45	Germany		....	....	....	Confluent	13	D
655	M	38	United States	S	....	....	....	Discrete	14	
656	M	19	United States	S	....	....	....	Confluent	15	D
657	M	18	United States	S	Ch	United States	F	Confluent	67	
658	M	24	Ireland	S	Ch	Ireland	F	Confluent	13	D
659	M	33	United States	S	Ch	United States	F	Discrete	14	
660	M	22	Sweden	S	Ch	Sweden	F	Confluent	18	
661	M	33	Norway		Ch	Norway	F	Discrete	12	
662	M	20	Ireland	S	Ch	Ireland	B	Confluent	33	
663	M	56	United States	S	31	United States	F	Discrete	18	
664	M	4	Germany	S	....	....	....	Confluent	....	D
665	M	22	England	S	Ch 19	England	B	Confluent	16	D
666		54	Canada		Ch	Canada	F	Discrete	30	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
667	M	35	Norway		....	Norway	....	Discrete	24	
668	M	39	United States		I	....	F	Discrete	25	
669		3	United States	S	....	....	....	Confluent	24	
670	M	21	United States	S	....	United States	....	Confluent	13	D
671		10	United States	S	I	....	G	Discrete	10	
672		4	Canada	S	....	....	....	Confluent	16	D
673	M	26	Ireland	S	....	....	F	Confluent	14	D
674	M	7	Ireland	S	....	Ireland	....	Confluent	32	
675	M	28	Ireland	S	I	Ireland-U. S	G	Discrete	17	
676	M	31	Ireland	S	Ch-31	Ireland-U. S	G	Discrete	20	
677	M	30	United States	S	Ch-30	United States	G	Discrete	14	
678	M	29	United States	S	Ch-29	United States	G	Discrete	15	
679	M	39	United States	S	Ch-39	....	G	Discrete	11	
680	M	33	United States	S	....	....	....	Confluent	17	D
681		11	Sweden	S	....	Sweden	....	Discrete	27	
682	M	40	Sweden	S	I	Sweden-U. S	F	Discrete	30	
683	M	28	Sweden	S	Ch-28	Sweden-U. S	F	Confluent	24	
684	M	27	Switzerland	S	I-28	Switzerland	F	Discrete	26	
685	M	21	United States	S	Ch	....	G	Discrete	16	
686	M	29	Bohemia	S	....	Bohemia	....	Confluent	23	D
687	M	22	Scotland	S	Ch	Scotland	F	Discrete	15	
688	M	32	United States		32	United States	F	Discrete	46	
689	M	57	United States	S	I	United States	B	Discrete	39	
690	M	42	United States	S	I	United States	....	Confluent	72	
691		22	United States	S	....	....	....	Hemorrhagic	....	D
692	M	13m	United States	S	....	....	....	Hemorrhagic	9	D
693		17	Poland	S	....	....	....	Confluent	10	D
694		4	Poland	S	....	....	....	Confluent	34	
695		31	Ireland	S	....	....	....	Confluent	32	
696		24	United States	S	....	....	....	Confluent	49	
697	M	21	United States	S	....	....	....	Hemorrhagic	8	D
698	M	34	Ireland	S	....	....	....	Confluent	48	D
699	M	26	Ireland	S	Ch	Ireland	B	Confluent	47	
700	M	22	United States	S	17	United States	G	Discrete	16	
701	M	19	United States	S	I	United States	F	Discrete	44	
702	M	35	Sweden	S	I	Sweden	F	Discrete	44	
703	M	6	United States	S	....	....	....	Discrete	25	
704	M	30	Sweden	S	Ch	Sweden	G	Discrete	16	
705	M	36	Denmark	S	Ch	Denmark	F	Discrete	22	
706	M	30	United States	S	....	....	....	Confluent	9	D
707	M	18	Germany	S	Ch	Germany	F	Discrete	18	
708	M	22	United States	S	....	....	....	Confluent	11	D
709	M	45	United States	S	Ch	United States	G	Discrete	12	
710	M	29	Germany	S	....	....	....	Confluent	9	D
711	M	23	United States	S	....	United States	....	Confluent	12	D
712	M	27	Germany	S	21	United States	G	Discrete	19	
713	M	29	Sweden	S	I	Sweden	G	Discrete	17	
714	M	37	Germany	S	I	Germany	B	Confluent	23	
715	M	25	United States	S	15	United States	G	Discrete	15	
716		32	Ireland	S	I	Ireland	B	Confluent	53	
717	M	22	United States	S	....	....	....	Discrete	47	
718	M	18	United States	S	....	....	....	Confluent	41	
719	M	10m	United States	S	....	....	....	Discrete	27	
720	M	7	Sweden	S	....	....	....	Discrete	19	
721	M	3	United States	S	....	....	....	Discrete	....	D
722	M	54	Ireland	S	I	Ireland	F	Discrete	19	D
723		48	Germany		Ch	Germany	F	....	....	D
724	M	4	United States	S	....	....	....	Discrete	31	
725	M	2	United States	S	....	....	....	Discrete	12	
726	M	2m	United States	S	....	....	....	Discrete	10	D
727	M	5	United States	S	....	....	....	Discrete	15	
728	M	39	Ireland	S	Ch	Ireland	G	Confluent	17	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state.]3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
729	M	33	Ireland	S	Ch	Ireland	F	Confluent	37	
730	M	35	Norway	S	Ch	Norway	F	Confluent	38	
731	M	20m	Germany	S	....	....	....	Discrete	16	D
732	M	4m	United States	S	....	....	....	Discrete	19	
733	M	33	Norway	S	Ch	Norway	F	Discrete	17	
734	M	30	United States	S	....	....	....	Confluent	22	
735	M	29	England	S	Ch	England	F	Discrete	33	
736	M	48	Bohemia		....	....	....	Confluent	14	D
737	M	36	Germany		Ch	Germany	F	Discrete	14	
738	M	48	Bohemia		....	....	....	Confluent	14	D
739	M	20	Bohemia	S	....	....	....	Confluent	6	D
740	M	25	United States	S	....	....	....	Confluent	12	D
741	M	30	Ireland	S	Ch	Ireland	F	Discrete	21	
742	M	29	Sweden	S	Ch	Sweden	F	Discrete	31	
743	M	4	United States	S	....	....	....	Discrete	13	
744	M	24	United States		Ch	United States	F	Discrete	35	
745	M	45	Scotland	S	Ch–45	Scotland-U. S	F	Confluent	5	
746	M	37	England	S	27	United States	F	Discrete	29	
747	M	46	United States	S	46	United States	F	Discrete	12	
748		19	United States	S	....	....	....	Confluent	....	D
749		24	Bohemia		....	....	....	Discrete	31	
750	M	15	Germany	S	Ch	Germany	F	Confluent	24	
751		16	Ireland	S	Ch	Ireland	G	Discrete	16	
752	M	4m	United States	S	....	....	....	Discrete	31	
753		35	Ireland		Ch	Ireland	G	Discrete	23	
754	M	17	Bohemia	S	....	....	....	Discrete	34	
755	M	20	Bohemia	S	Ch	Bohemia	G	Discrete	17	
756	M	29	United States	S	....	....	....	Discrete	34	
757	M	24	Ireland	S	15	Ireland	F	Confluent	19	
758	M	26	Germany	S	Ch	Germany	F	Confluent	31	
759	M	36	United States		Ch	United States	G	Discrete	21	
760	M	31	United States	S	....	....	....	Confluent	10	D
761	M	23	United States	S	Ch	United States	F	Discrete	34	
762	M	35	Germany		Ch	Germany	G	Discrete	14	
763	M	23	Scotland	S	Ch	Scotland	G	Discrete	12	
764	M	35	Germany	S	Ch	Germany	F	Confluent	18	
765		10m	United States	S	....	....	....	Discrete	13	
766		36	Ireland		Ch	Ireland	G	Discrete	11	
767	M	23	United States	S	Ch	United States	F	Discrete	28	
768	M	31	United States		....	....	....	Confluent	20	
769	M	....	Ireland		....	....	....	....	....	D
770	M	20	Poland	S	....	....	....	Confluent	22	
771		20	Bohemia		Ch	Bohemia	F	Confluent	20	
772		16m	Bohemia	S	....	....	....	Discrete	14	
773	M	57	United States		Ch	United States	F	Confluent	15	
774	M	37	Poland	S	Ch	Poland	F	Confluent	12	D
775	M	36	United States	S	16	United States	F	Confluent	16	
776	M	21	United States	S	....	....	....	Confluent	8	D
777	M	46	United States	S	Ch	United States	G	Discrete	9	
778	M	20	Bohemia	S	....	....	....	Discrete	15	
779	M	26	Poland		Ch	Poland	G	Discrete	38	
780	M	21	United States	S	....	....	....	Confluent	18	D
781		17	Germany	S	....	....	....	Discrete	15	
782		18	Bohemia	S	Ch	Bohemia	F	Discrete	28	
783	M	43	United States		Ch	United States	B	Confluent	13	D
784	M	5	Poland	S	....	....	....	Confluent	12	D
785	M	23	England	S	12	England	F	Discrete	21	
786	M	28	United States	S	....	....	....	Confluent	9	D
787	M	6	Bohemia	S	....	....	....	Discrete	19	
788	M	23	United States	S	....	....	....	Confluent	26	
789	M	22	United States	S	Ch	United States	F	Discrete	27	
790	M	40	Germany	S	Ch	Germany	F	Discrete	28	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
791	M	27	Ireland	S	Ch	Ireland	F	Discrete	12	
792		18	Ireland	S	Ch	Ireland	B	Confluent	16	D
793		22	United States		Ch	United States	F	Confluent	17	
794	M	24	United States	S	16	United States	F	Discrete	15	
795	M	20	United States	S	Ch	United States	B	Confluent	20	D
796	M	37	United States		31	United States	B	Confluent	15	D
797		21	Poland		Ch	Poland	F	Discrete	26	
798	M	10m	United States	S	....	....	....	Confluent	11	D
799	M	40	Ireland		Ch	Ireland	B	Confluent	20	
800		16	Bohemia	S	....	....	....	Confluent	11	D
801	M	24	United States	S	....	....	....	Confluent	13	D
802	M	21	Germany	S	Ch-21	Germany-U. S.	F	Discrete	13	
803	M	18	United States	S	....	....	....	Confluent	32	
804	M	23	United States	S	....	....	....	Confluent	23	D
805	M	24	United States		Ch	....	....	Confluent	18	
806	M	32	United States	S	....	....	....	Confluent	16	
807	M	33	England		Ch	England	F	Confluent	29	
808		20	United States		....	....	....	Confluent	13	
809	M	20	United States	S	....	....	....	Confluent	21	
810		21	United States	S	....	....	....	Confluent	34	
811	M	28	Ireland	S	Ch	....	....	Discrete	18	
812	M	16	Germany	S	....	....	....	Confluent	36	
813	M	41	United States	S	Ch	United States	....	Confluent	12	D
814	M	45	Ireland	S	38	United States	G	Discrete	11	
815	M	22	United States	S	....	....	....	Confluent	14	D
816		33	Germany	S	Ch	Germany	G	Discrete	24	
817	M	23	United States	S	....	....	....	Confluent	14	D
818		20	United States		....	....	....	....	....	D
819		17	United States	S	....	....	....	Confluent	10	D
820		33	Ireland		....	....	....	Discrete	17	
821	M	23	United States		Ch	United States	F	Discrete	35	
822	M	37	United States		17	United States	F	Discrete	38	
823	M	38	United States	S	Ch-38	United States	F	Discrete	35	
824	M	24	Germany	S	14	Germany	G	Discrete	20	
825	M	40	United States		Ch	United States	G	Discrete	19	
826	M	20	United States	S	....	....	....	Confluent	15	D
827	M	43	Italy		....	....	....	Discrete	31	
828	M	30	Ireland	S	20	Italy	B	Confluent	8	
829	M	30	Ireland	S	Ch	Ireland	F	Confluent	12	D
830		26	Ireland		Ch	Ireland	F	Discrete	38	
831	M	27	Ireland	S	I	Ireland	F	Confluent	12	D
832	M	30	United States	S	....	....	....	Confluent	11	D
833		21	Sweden	S	Ch	Sweden	F	Confluent	29	
834	M	23	United States	S	Ch	United States	B	Confluent	47	
835	M	29	Ireland	S	Ch	Ireland	B	Confluent	37	
836		27	Ireland		....	....	....	Confluent	11	
837		28	Sweden	S	Ch	Sweden	B	Discrete	48	
838	M	35	United States		Ch	United States	....	Confluent	13	D
839	M	21	United States	S	....	....	....	Discrete	22	
840		17	United States	S	Ch	United States	G	Discrete	20	
841	M	26	United States	S	Ch	United States	B	Discrete	40	
842	M	28	United States	S	....	....	....	Confluent	13	D
843	M	26	United States		....	....	....	Confluent	15	D
844		25	United States		....	....	....	Discrete	19	
845	M	36	United States	S	Ch	United States	B	Confluent	15	D
846	M	28	Ireland	S	....	....	....	Confluent	9	
847	M	28	Norway	S	19	Norway	B	Confluent	11	D
848	M	22	Ireland	S	....	....	....	Discrete	18	
849	M	39	Germany		....	....	....	Discrete	18	
850	M	30	Ireland	S	Ch	Ireland	F	Discrete	17	
851	M	17	Germany	S	....	....	....	Confluent	31	
852	M	54	United States	S	20	United States	B	Confluent	8	D

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED. When. [4]	VACCINATED. Where. [5]	VACCINATED. Result. [6]	CHARACTER OF ATTACK.	Days duration.	Result. [7]
853	M	37	United States		Ch	United States	G	Discrete	13	
854	M	27	United States	S	...	...	...	Confluent	2	D
855		9	United States	S	...	...	...	Confluent	35	
856	M	25	United States	S	16–25	...	F	Discrete	9	
857	M	39	Germany	S	Ch	Germany	G	Discrete	14	
858	M	29	United States		...	...	...	Discrete	19	
859	M	22	United States		22	...	...	Discrete	17	
860	M	32	Ireland		Ch	Ireland	B	Discrete	17	
861	M	42	Germany	S	42	United States	F	Confluent	21	
862		....	Germany		Ch	Germany	B	Discrete	51	
863	M	35	Ireland	S	29	United States	F	Confluent	27	
864		4	Poland	S	...	...	...	Discrete	16	D
865		9m	United States	S	...	...	...	Confluent	42	
866		15	Poland	S	...	...	...	Discrete	15	
867		18	Poland	S	Ch	Poland	G	Discrete	13	
868	M	37	United States	S	Ch	United States	F	Confluent	22	
869	M	6	Germany	S	...	...	...	Discrete	12	
870		17	Germany	S	...	...	...	Discrete	44	
871	M	30	United States		30	...	...	Discrete	28	
872		35	Germany		...	...	...	Discrete	45	
873	M	34	United States	S	...	...	...	Confluent	36	
874	M	27	United States		...	...	...	Confluent	27	D
875	M	32	United States	S	...	...	...	Confluent	13	D
876	M	37	United States	S	...	...	...	Confluent	....	D
877	M	27	United States		17	United States	G	Discrete	9	
878		41	United States		Cb	United States	G	Discrete	12	
879	M	3	United States	S	...	...	...	Discrete	16	
880		16m	Germany	S	...	...	...	Discrete	13	
881		25	Norway	S	Ch	Norway	G	Discrete	11	
882	M	65	Germany	S	Ch	Germany	B	Confluent	67	
883	M	45	United States	S	...	...	...	Discrete	12	
884	M	35	Ireland		...	...	...	Confluent	16	
885	M	24	United States	S	...	...	...	Confluent	11	
886	M	16	Germany	S	...	...	...	Confluent	47	
887	M	20	United States	S	...	...	...	Confluent	11	D
888	M	26	United States	S	Ch	United States	B	Discrete	42	
889		20	United States	S	Ch	United States	F	Discrete	31	
890	M	53	Ireland	S	...	...	...	Discrete	17	
891	M	34	Ireland		Ch	Ireland	F	Discrete	33	
892	M	16	United States	S	Ch	United States	G	Discrete	12	
893	M	58	United States		38	...	...	Discrete	11	D
894		29	United States	S	Ch	United States	B	Confluent	12	D
895	M	8	Germany	S	...	...	...	Confluent	11	D
896		22	United States		...	...	...	Discrete	20	
897		5	Germany	S	...	...	...	Discrete	27	
898	M	2	Germany	S	...	...	...	Discrete	19	D
899		4	Germany	S	...	...	...	Discrete	14	
900	M	19	United States	S	...	...	...	Confluent	75	
901		58	United States		24	United States	G	Discrete	16	
902		32	Bohemia		Ch	Bohemia	F	Discrete	29	
903		29	United States		Ch	United States	...	Confluent	11	D
904	M	19	United States	S	...	...	...	Confluent	29	D
905	M	22	United States	S	...	...	...	Confluent	11	D
906	M	20	United States	S	...	...	...	Confluent	12	D
907	M	38	Sweden	S	Ch	Sweden	F	Discrete	32	
908	M	44	Germany	S	Ch	Germany	F	Discrete	20	
909	M	13	United States	S	...	...	...	Discrete	19	
910		3	United States	S	...	...	...	Hemorrhagic	12	D
911	M	20	Bohemia	S	Ch-20	Bohemia U. S.	G	Discrete	25	
912		30	England		Ch	England	F	Confluent	46	
913	M	19	United States	S	...	...	...	Confluent	97	
914	M	3	United States	S	...	...	...	Confluent	43	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
915	M	22	Canada.......	S	....	....	....	Hemorrhagic ..	8	
916	M	23	Germany.....	S	....	....	....	Discrete........	44	
917	M	5	Germany.....	S	....	....	....	Hemorrhagic ..	5	D
918	M	6	United States	S	....	....	....	Confluent	7	
919		15	Bohemia	S	14	United States....	G	Discrete........	17	
920	M	13	Bohemia	S	Ch	Bohemia	G	Discrete........	19	
921	M	9	United States	S	....	....	....	Confluent	15	D
922	M	2	United States	S	....	....	....	Confluent	30	
923		23	Canada.......	S	....	....	....	Confluent	32	
924		30	United States	S	....	....	....	Confluent	31	
925		13	United States	S	....	....	....	Confluent	46	
926		24	United States	S	15	United States....	F	Confluent	36	
927	M	30	Canada.......	S	Ch	Canada...........	F	Confluent	27	
928		8	Italy	S	....	....	....	Confluent	74	
929	M	18	United States	S	....	....	....	Hemorrhagic ..	6	D
930	M	46	England.	S	30	England...........	G	Discrete........	9	
931		27	United States		Ch	United States....	G	Discrete........	12	
932		3	United States	S	....	....	....	Discrete........	19	
933		23	Scotland	S	Ch	Scotland	F	Discrete........	15	
934	M	7	Poland.......	S	....	....	....	Discrete........	19	
935		25	Sweden	S	....	....	....	Discrete	21	
936		15	United States	S	15	....	....	Confluent	39	
937	M	33	Sweden	S	I	Sweden	B	Confluent	39	
938	M	36	United States	S	16	United States ...	B	Confluent	34	
939		29	United States	S	....	....	....	Confluent	10	
940	M	28	Ireland.......	S	Ch	Ireland...........	G	Discrete	19	
941	M	54	Sweden	S	34	Sweden	G	Discrete........	35	
942		18	Poland.......	S	I	Poland...........	F	Confluent	19	
943		7	United States	S	....	....	....	Confluent	18	
944		23	United States		Ch	....	....	Confluent	42	
945		29	United States		....	....	....	Confluent	29	
946		20	United States	S	....	....	....	....	....	D
947	M	2	United States	S	....	....	....	Confluent	18	D
948	M	39	United States	S	39	....	....	Discrete	24	
949	M	12	United States	S	Ch	....	....	Discrete	27	
950	M	21	Germany	S	....	....	....	Confluent	....	D
951	M	27	Germany	S	19	United States....	G	Discrete	28	
952	M	3	Germany	S	....	....	....	Discrete	12	
953		5	Germany	S	....	....	....	Confluent	28	D
954	M	3	Poland.......	S	....	....	....	Discrete	19	
955	M	7	Poland.......	S	....	....	....	Discrete	21	
956	M	5	Poland.......	S	....	....	....	Confluent	15	D
957	M	40	Italy	S	....	....	....	Confluent	19	
958		29	England......		....	....	....	Discrete	20	
959	M	50	United States		Ch	United States....	F	Hemorrhagic ..	....	D
960	M	37	England......	S	Ch	England..........	F	Confluent	16	D
961	M	6	Germany	S	....	....	....	Discrete	13	
962	M	32	Sweden	S	Ch	Sweden	G	Discrete........	18	
963	M	47	United States	S	Ch-47	United States....	G	Discrete........	16	
964	M	10m	Bohemia	S	....	....	....	Discrete........	11	D
965	M	24	United States	S	....	....	....	....	....	D
966	M	20	America......	S	....	....	....	Confluent	12	D
967	M	30	United States	S	....	....	....	Confluent	37	
968	M	29	United States	S	....	....	....	Discrete........	14	
969	M	32	Sweden	S	....	....	....	Discrete	18	
970		40	United States	S	....	....	....	Discrete	21	
971	M	4	United States	S	....	....	....	Confluent	19	D
972	M	30	Ireland	S	I	Ireland...........	G	Discrete........	14	
973		35	United States		Ch	United States....	B	Discrete........	17	D
974		24	United States		Ch-15	United States....	F	Confluent	25	
975	M	42	Germany.....	S	I	Germany.........	G	Discrete........	16	
976	M	44	Germany....	S	I	Germany.........	G	Discrete........	22	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
977	M	30	United States	S	Ch	United States....	....	Discrete........	54	
978	M	26	Germany.....	S	13	Germany.........	....	Confluent	24	
979	M	23	Germany.....	S	Ch	Germany.........	....	Confluent	15	D
980	M	19	Sweden	S	Ch	....	....	Confluent	15	D
981		7	United States	S	....	....	....	Confluent	18	
982	M	48	Germany.....	S	Ch	Germany.........	F	Discrete........	9	
983	M	5	United States	S	....	....	....	Confluent	8	D
984	M	39	Germany.....	S	Ch	Germany.........	F	Discrete........	17	
985		2	United States	S	I	United States....	B	Discrete........	20	
986		6	United States	S	....	....	....	Discrete........	38	
987	M	33	United States		Ch	United States....	G	Discrete........	25	
988	M	26	Ireland.......	S	....	....	....	Confluent	30	D
989	M	32	Sweden	S	....	....	....	Confluent	26	D
990	M	39	United States		....	United States....	....	Discrete........	39	
991	M	22	United States	S	Ch	United States....	....	Discrete	48	
992	M	31	United States	S	Ch-31	United States....	....	Discrete	69	
993	M	56	Scotland.....	S	Ch	....	....	Discrete	30	
994		36	France	S	Ch	....	....	Discrete........	23	
995	M	35	Ireland.......	S	Ch	....	....	Discrete........	18	
996	M	28	United States	S	15	United States....	F	Discrete	26	
997	M	36	Ireland.......	S	....	....	....	Discrete	36	
998		8	United States	S	....	....	....	Confluent	11	D
999		32	England	S	....	....	....	Confluent	35	
1000	M	35	United States	S	....	....	....	Discrete........	19	
1001	M	31	Ireland.......	S	Ch	....	....	Discrete	15	
1002	M	35	Ireland.......	S	I-35	Ireland...........	G	Discrete........	24	
1003		25	United States		Ch-25	United States....	G	Discrete........	14	
1004	M	5	United States	S	....	....	....	Discrete........	18	
1005		22	United States		....	....	....	Discrete........	19	
1006		13m	United States	S	....	....	....	Hemorrhagic ..	28	D
1007	M	21	Germany.....	S	Ch	....	....	Discrete	17	
1008	M	31	Denmark	S	....	....	....	Discrete	21	D
1009		30	Ireland.......	S	Ch	....	....	Discrete	12	
1010		7	United States	S	....	....	....	Discrete	11	
1011		23	Sweden		....	....	....	Discrete........	15	
1012	M	42	Norway	S	....	....	....	Discrete........	16	
1013	M	37	Ireland.......	S	....	....	....	Discrete........	10	
1014	M	40	Germany.....	S	....	....	....	Discrete	21	
1015	M	9	United States	S	I	United States....	....	Discrete	24	
1016		5	United States	S	I	United States....	....	Discrete	23	
1017		10m	Arabia	S	....	....	....	Discrete	42	
1018	M	36	Ireland.......	S	I	Ireland...........	....	Discrete	11	
1019	M	19	Sweden	S	....	....	....	Discrete	9	
1020	M	33	Ireland.......	S	....	....	....	Discrete	21	
1021		4	United States	S	....	....	....	Discrete	13	D
1022	M	27	Sweden	S	....	....	....	Hemorrhagic ..	15	
1023	M	48	United States	S	48	United States....	G	Discrete........	28	
1024	M	13	United States	S	I	United States....	....	Discrete........	24	
1025	M	19	United States	S	16	United States....	F	Confluent	28	D
1026	M	45	United States	S	45	....	B	Confluent	37	
1027	M	43	United States	S	....	....	....	Hemorrhagic ..	8	D
1028	M	26	Scotland	S	....	....	....	Discrete........	7	
1029	M	38	United States		Ch	United States....	G	Discrete........	13	
1030		22	Germany.....		....	....	....	Confluent	20	
1031		14	Bohemia	S	....	....	....	Confluent	45	
1032	M	50	United States	S	Ch	United States....	B	Confluent	27	
1033		18	Germany.....		....	....	....	Confluent	34	
1034	M	31	Sweden	S	Ch	Sweden	B	Confluent	11	D
1035	M	21	Canada.......	S	....	....	....	Confluent	41	
1036	M	45	United States	S	....	....	....	Discrete........	38	
1037	M	33	Ireland.......	S	Ch	Ireland...........	G	Discrete........	16	
1038	M	40	United States	S	Ch	United States....	G	Discrete.	11	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd

Number of Case.	Sex. [1]	Age. [2]	NATIVITY	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
1039		40	United States	S	....	....	....	Discrete	6	
1040	M	32	Germany	S	Ch	Germany	G	Discrete	11	
1041	M	26	Germany	S	Ch	Germany	F	Discrete	25	
1042		30	Ireland		Ch	Ireland	G	Discrete	16	
1043	M	30	United States	S	....	....	....	Confluent	11	D
1044	M	39	United States		....	....	....	Confluent	12	D
1045	M	30	United States	S	....	....	....	Confluent	42	
1046		23	Ireland	S	23	....	....	Discrete	12	
1047		4	United States	S	4	....	....	Discrete	25	
1048		19	United States	S	19	....	....	Discrete	32	
1049		23	United States	S	....	....	....	Confluent	12	D
1050	M	32	Ireland	S	....	....	....	Confluent	26	
1051	M	42	United States		Ch	United States	....	Confluent	10	D
1052	M	28	United States	S	....	....	....	Confluent	11	D
1053	M	33	England	S	26	....	....	Confluent	33	
1054		5	Bohemia	S	....	....	....	Discrete	37	
1055	M	16	Bohemia	S	....	....	....	Confluent	16	
1056		2	United States	S	....	....	....	Confluent	17	
1057		37	Ireland	S	Ch	Ireland	....	Confluent	8	D
1058	M	37	Germany		Ch	....	....	Confluent	32	
1059	M	6	Germany	S	....	....	....	Confluent	12	D
1060	M	22	Canada	S	I-15	Canada	G	Confluent	40	
1061	M	24	United States	S	18	United States	....	Confluent	13	D
1062	M	49	England	S	I	England	F	Confluent	6	D
1063	M	19	Ireland	S	....	....	....	Discrete	12	
1064	M	10	United States	S	....	....	....	Discrete	10	
1065	M	45	Ireland	S	....	....	....	Confluent	20	D
1066		7	United States	S	....	....	....	Discrete	9	
1067	M	22	Germany	S	....	....	....	Confluent	12	D
1068	M	44	Norway	S	Ch	Norway	F	Confluent	49	D
1069		3	United States	S	....	....	....	Discrete	13	
1070		23	Ireland		....	....	....	Confluent	37	
1071	M	33	United States	S	26	United States	G	Confluent	27	
1072		5	Poland	S	....	....	....	Discrete	14	
1073	M	29	Canada	S	....	....	....	Discrete	16	
1074	M	36	United States	S	Ch	United States	G	Discrete	24	
1075	M	18	United States	S	I	United States	....	Discrete	49	
1076	M	45	Switzerland	S	1	Switzerland	B	Discrete	41	
1077		23	United States	S	....	....	....	Confluent	13	D
1078	M	29	Ireland	S	Ch	....	....	Discrete	19	
1079	M	18	United States	S	Ch	....	....	Discrete	12	
1080	M	38	United States	S	32	....	....	Discrete	14	
1081	M	20	United States	S	....	....	....	Discrete	12	
1082	M	27	United States	S	....	....	....	Discrete	11	D
1083		5	United States	S	....	....	....	Discrete	7	
1084	M	34	United States	S	Ch	United States	G	Discrete	13	
1085	M	39	Norway		Ch	Norway	F	Discrete	13	
1086	M	33	United States	S	....	....	....	Confluent	8	D
1087	M	52	Ireland	S	1	Ireland	....	Discrete	10	D
1088	M	30	England	S	Ch	....	....	Discrete	12	
1089	M	34	Germany	S	32	....	....	Discrete	28	
1090	M	33	United States	S	Ch	....	....	Discrete	19	
1091		8	United States	S	I	United States	....	Discrete	29	
1092	M	8	United States	S	Ch	....	....	Discrete	30	
1093		25	United States	S	....	....	....	Discrete	19	
1094		32	Sweden	S	....	....	....	Discrete	10	D
1095	M	37	United States		Ch	United States	....	Hemorrhagic	....	D
1096		42	Canada		32	....	....	Discrete	8	
1097	M	32	Ireland	S	....	....	....	Confluent	13	D
1098	M	18	United States	S	Ch	United States	....	Discrete	41	
1099		19	Germany	S	....	....	....	Discrete	31	
1100	M	18	United States	S	....	....	....	Confluent	56	

NOTE.—For the significance of the initial letters, figures, contractions, etc., in these columns, refer to *Explanations* preceding first page of TABULAR STATEMENT.

STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
1101	M	30	Canada		....	....	....	Confluent	9	D
1102	M	5	United States	S	....	....	....	Confluent	15	D
1103		25	United States		Ch	United States	B	Confluent	25	D
1104		26	United States	S	Ch	United States	G	Discrete	22	
1105		2	United States	S	2	....	....	Discrete	17	
1106		30	United States		30	....	....	Discrete	18	
1107	M	15	United States	S	....	....	....	Confluent	15	D
1108	M	20	Bohemia	S	....	....	....	Discrete	16	
1109	M	20	United States	S	....	....	....	Confluent	11	D
1110	M	28	United States	S	....	....	....	Confluent	53	D
1111	M	18	United States	S	18	....	....	Discrete	25	
1112		21	United States		....	....	....	Discrete	14	
1113	M	39	United States		39	....	....	Discrete	36	
1114		26	United States		Ch	United States	....	Confluent	35	
1115		10	United States	S	10	....	....	Discrete	17	
1116	M	23	United States	S	....	....	....	Confluent	42	
1117		19	United States	S	....	....	....	Confluent	32	
1118	M	36	United States	S	....	....	....	Confluent	31	
1119	M	35	United States	S	Ch	....	....	Dfscrete.	30	
1120	M	22	United States	S	Ch	....	....	Discrete	19	
1121		58	United States		Ch	....	....	Discrete	12	
1122		35	Germany	S	Ch	....	....	Discrete	11	
1123	M	35	Sweden	S	Ch	Sweden	....	Discrete	31	
1124	M	18	United States	S	Ch	United States	....	Discrete	26	
1125	M	1m	United States	S	....	....	....	Discrete	9	
1126		18	Germany	S	....	....	....	Confluent	3	D
1127	M	29	Germany	S	....	....	....	Confluent	43	
1128	M	25	Germany		Ch	Germany	....	Discrete	12	
1129	M	28	United States	S	....	....	....	Confluent	19	
1130	M	20	United States	S	....	....	....	Hemorrhagic	....	D
1131	M	23	United States	S	Ch	United States	F	Discrete	14	
1132	M	23	England	S	Ch	....	F	Discrete	12	
1133	M	20	United States	S	....	....	....	Discrete	8	D
1134	M	30	Sweden	S	1	Sweden	F	Discrete	21	
1135		38	Sweden		I	Sweden	F	Discrete	14	
1136	M	46	United States	S	I	United States	F	Discrete	30	
1137	M	30	United States	S	Ch	United States	F	Discrete	39	
1138	M	19	United States	S	....	....	....	Confluent	31	D
1139		8	Sweden	S	Ch	Sweden	G	Discrete	30	
1140		5	United States	S	Ch	United States	G	Discrete	30	
1141	M	34	Sweden	S	I	Sweden	....	Discrete	12	
1142	M	26	United States	S	Ch	United States	G	Confluent	9	D
1143	M	36	United States	S	I	United States	B	Discrete	7	D
1144		28	Ireland		I	Ireland	G	Discrete	16	
1145	M	34	United States	S	Ch	United States	G	Discrete	17	
1146	M	33	Germany		I	Germany	G	Discrete	17	
1147	M	11m	United States	S	....	....	....	Discrete	21	
1148	M	21	Germany	S	21	United States	....	Discrete	45	
1149	M	22	United States	S	I	United States	B	Discrete	15	
1150	M	22	Ireland	S	I	Ireland	B	Confluent	9	D
1151	M	30	Ireland	S	Ch	Ireland	....	Discrete	11	
1152	M	33	United States	S	I	United States	F	Discrete	53	
1153	M	24	United States	S	I-24	United States	F	Discrete	26	
1154	M	23	Ireland	S	I	Ireland	G	Discrete	47	
1155		3	United States	S	....	....	....	Confluent	....	D
1156		20	Sweden	S	....	....	....	Discrete	12	D
1157	M	25	Sweden	S	Ch	United States	F	Discrete	10	
1158	M	37	Denmark		I-25	Denmark-U. S.	G	Discrete	17	
1159	M	23	Ireland	S	I	Ireland	G	Discrete	17	
1160	M	27	United States	S	Ch	United States	G	Discrete	17	
1161	M	45	Germany	S	I	Germany	F	Discrete	12	
1162	M	23	United States	S	....	....	....	....	....	D

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
1163	M	29	Sweden	S	I	Sweden	B	Discrete	23	
1164	M	23	United States	S	13	United States	F	Discrete	23	
1165		45	Norway	S	....	....	....	Confluent	12	D
1166		20	United States	S	20	....	....	Discrete	19	
1167		30m	United States	S	....	....	....	Discrete	21	
1168		26	Sweden		18	....	....	Discrete	27	
1169	M	47	United States	S	47	....	....	Discrete	18	
1170	M	20	Germany	S	Ch	Germany	....	Confluent	39	
1171	M	30	Italy	S	....	....	....	Confluent	52	
1172		33	Germany		Ch	Germany	....	Discrete	15	
1173	M	34	Italy		Ch	Italy	....	Confluent	29	
1174	M	26	Italy		Ch	....	....	Discrete	21	
1175	M	19	United States	S	Ch	United States	....	Confluent	30	
1176		31	United States	S	Ch	United States	....	Discrete	14	
1177	M	17	United States	S	....	....	....	Confluent	28	
1178	M	15	Germany	S	....	....	....	Confluent	28	
1179	M	20	Germany	S	....	....	....	Confluent	17	D
1180		20	United States		20	....	....	Discrete	28	
1181	M	27	United States		27	....	....	Confluent	16	D
1182		26	Sweden		Ch	Sweden	G	Discrete	20	
1183	M	64	United States		44	....	....	Discrete	30	D
1184	M	20	Germany	S	13	....	....	Discrete	15	
1185	M	23	United States	S	....	....	....	Confluent	12	D
1186	M	8	Germany	S	....	....	....	Discrete	29	
1187	M	19	United States	S	....	....	....	Confluent	56	
1188	M	9	United States	S	....	....	....	Confluent	40	
1189		6	United States	S	....	....	....	Hemorrhagic	4	D
1190		10	United States	S	Ch	....	....	Hemorrhagic	7	D
1191	M	36	Germany		I-23	Germany	F	Discrete	22	
1192		26	United States		Ch	....	....	Confluent	41	
1193		28	United States		I	United States	....	Confluent	11	D
1194		5	United States	S	....	....	....	Discrete	22	
1195	M	24	United States	S	18	....	....	Discrete	17	D
1196	M	40	Germany	S	....	....	....	Discrete	11	
1197	M	37	United States		Ch	United States	....	Discrete	31	
1198	M	9	United States	S	....	....	....	Discrete	21	
1199		24	United States		Ch	....	....	Discrete	11	
1200		28	United States		Ch	United States	....	Discrete	28	
1201	M	5	United States	S	....	....	....	Confluent	7	D
1202		40	United States		Ch	United States	....	Confluent	13	D
1203	M	23	United States	S	23	....	....	Discrete	41	
1204	M	31	United States	S	....	....	....	Discrete	35	
1205	M	20	Ireland	S	Ch	Ireland	....	Discrete	9	
1206	M	2	United States	S	....	....	....	Confluent	....	D
1207	M	32	United States	S	....	....	....	Confluent	11	D
1208	M	34	United States	S	Ch	United States	....	Discrete	39	
1209	M	35	United States	S	....	....	....	Confluent	12	D
1210	M	4	United States	S	Ch	....	....	Discrete	9	
1211	M	7	United States	S	....	....	....	Confluent	13	D
1212		7	United States	S	....	....	....	Confluent	9	D
1213	M	6	United States	S	....	....	....	Confluent	9	D
1214		5	United States	S	....	....	....	Confluent	35	
1215		5	Poland	S	....	....	....	Confluent	9	D
1216	M	8	United States	S	....	....	....	Confluent	25	
1217		3	Poland	S	....	....	....	Confluent	25	
1218	M	16	United States	S	12	....	....	Discrete	23	
1219	M	26	United States	S	....	....	....	Confluent	41	
1220	M	27	Sweden	S	Ch	Sweden	....	Discrete	21	
1221	M	28	United States		....	....	....	Confluent	10	D
1222	M	3	United States	S	....	....	....	Discrete	20	
1223	M	1	United States	S	....	....	....	Confluent	....	D
1224	M	23	Ireland		Ch	Ireland	....	Discrete	13	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [8]	VACCINATED. When. [4]	VACCINATED. Where. [5]	VACCINATED. Result. [6]	CHARACTER OF ATTACK.	Days duration.	Result. [7]
1225	M	30	United States		Ch	United States	....	Discrete	43	
1226	M	24	United States	S	....	....	....	Confluent	7	D
1227		2	United States	S	....	....	....	Confluent	10	D
1228		4	United States	S	....	....	....	Discrete	28	
1229	M	1	United States	S	....	....	....	Discrete	50	
1230	M	20	Ireland	S	....	....	....	Discrete	8	
1231	M	24	Austria	S	....	....	....	Confluent	28	D
1232	M	32	United States	S	Ch	United States	....	Confluent	15	D
1233	M	21	Italy	S	17	United States	....	Discrete	17	
1234	M	28	United States	S	28	United States	....	Discrete	11	
1235	M	34	Norway		Ch	Norway	....	Discrete	16	
1236	M	3	United States	S	....	....	....	Confluent	11	D
1237		8	Poland	S	....	....	....	Discrete	13	
1238		20	United States		....	....	....	Discrete	23	
1239		27	Bohemia		Ch	Bohemia	....	Discrete	14	
1240		18	United States		Ch	United States	....	Discrete	8	
1241	M	4	United States	S	....	....	....	Discrete	19	
1242		6	United States	S	....	....	....	Discrete	22	
1243	M	3	United States	S	3	....	....	Discrete	7	
1244	M	19	United States	S	Ch	United States	....	Discrete	54	
1245		6	United States	S	....	....	....	Confluent	21	
1246		3	United States	S	....	....	....	Discrete	31	D
1247	M	3	United States	S	....	....	....	Confluent	7	
1248		23	Bohemia	S	Ch	Bohemia	....	Discrete	15	
1249	M	1	United States	S	....	....	....	Discrete	12	
1250		1	United States	S	....	....	....	Discrete	43	
1251		1	United States	S	....	....	....	Discrete	18	
1252		7	United States	S	....	....	....	Confluent	19	
1253		10	United States	S	....	....	....	Discrete	14	
1254		3	United States	S	....	....	....	Discrete	18	
1255	M	37	Canada		....	....	....	Discrete	15	
1256	M	2	United States	S	....	....	....	Discrete	16	
1257	M	34	China	S	26	....	....	Discrete	14	
1258	M	32	United States		....	....	....	Confluent	20	D
1259		6	Poland		....	....	....	Confluent	14	D
1260	M	26	United States	S	....	....	....	Discrete	27	
1261	M	30	United States	S	....	....	....	Confluent	11	D
1262	M	15	United States	S	....	....	....	Discrete	25	
1263	M	15	Germany	S	....	....	....	Discrete	12	
1264	M	50	Germany		Ch	Germany	....	Discrete	11	
1265		28	United States	S	28	United States	....	Discrete	23	
1266		3m	United States	S	....	....	....	Discrete	13	
1267		6	United States	S	6	....	....	Discrete	18	
1268		9	United States	S	....	....	....	Confluent	20	D
1269	M	8	United States	S	Ch	....	....	Discrete	10	D
1270		4	United States	S	....	....	....	Discrete	15	
1271	M	26	United States	S	Ch	United States	....	Confluent	6	D
1272	M	19	Germany	S	14	United States	....	Confluent	22	
1273	M	27	United States	S	17	....	....	Confluent	15	D
1274		3	United States	S	....	....	....	Confluent	20	
1275	M	40	United States		Ch	United States	....	Discrete	40	
1276		16	United States	S	....	....	....	Confluent	42	
1277		23	Germany		Ch-23	Germany-U. S.	....	Discrete	16	
1278	M	22	Germany		Ch-14	Germany-U. S.	....	Discrete	38	
1279		7	Bohemia	S	....	....	....	Confluent	24	
1280	M	8	United States	S	....	....	....	Confluent	35	
1281		3	United States	S	....	....	....	Confluent	10	D
1282	M	39	Germany	S	Ch	Germany	....	Discrete	36	
1283		3	United States	S	....	....	....	Confluent	11	D
1284		23	United States		Ch-23	United States	....	Discrete	16	
1285	M	37	United States		Ch	United States	....	Discrete	30	
1286	M	16	United States	S	....	....	....	Confluent	....	D

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED. When. [4]	Where. [5]	Result. [6]	CHARACTER OF ATTACK.	Days duration.	Result. [7]
1287	M	22	United States	S	....	....	....	Confluent	13	D
1288	M	3	United States	S	....	....	....	Confluent	11	D
1289		12	Bohemia	S	Ch	Bohemia	....	Confluent	25	
1290	M	33	United States	S	I	United States	....	Hemorrhagic	8	D
1291	M	34	United States	S	I	United States	....	....	....	D
1292		11	Bohemia	S	Ch	United States	....	Discrete	17	
1293		6	United States	S	....	....	....	Discrete	25	
1294	M	19	United States	S	....	....	....	Confluent	41	
1295	M	30m	United States	S	....	....	....	Confluent	17	
1296	M	9	United States	S	....	....	....	Confluent	26	
1297	M	28	Ireland	S	Ch	Ireland	....	Discrete	15	
1298	M	18	United States	S	....	....	....	Discrete	24	
1299		36	England		Ch	England	....	Confluent	19	
1300		36	Germany		....	....	....	Discrete	13	
1301	M	35	United States	S	Ch	United States	....	Discrete	11	
1302	M	37	United States	S	....	....	....	Discrete	17	
1303	M	4	United States	S	4	United States	....	Discrete	28	
1304	M	13	United States	S	Ch	United States	....	Discrete	28	
1305	M	45	United States		11	United States	....	Discrete	42	
1306	M	19	United States	S	....	....	....	Confluent	18	D
1307		8m	United States	S	....	....	....	Confluent	9	D
1308		28	United States	S	....	....	....	....	....	D
1309	M	39	United States	S	Ch	United States	....	Discrete	16	
1310	M	25	United States		....	....	....	Hemorrhagic	5	D
1311	M	19	United States	S	Ch	United States	....	Discrete	11	
1312		28	United States		I	United States	....	Confluent	20	D
1313		6	United States	S	....	....	....	Confluent	25	
1314	M	19	United States	S	....	....	....	Discrete	69	
1315	M	25	Ireland	S	Ch-25	Ireland	....	Confluent	65	
1316	M	27	United States	S	....	....	....	Hemorrhagic	9	D
1317	M	20	America	S	....	....	....	Confluent	12	D
1318	M	30	United States	S	....	....	....	Confluent	27	
1319	M	39	United States		....	United States	....	Discrete	39	
1320	M	22	United States	S	Ch	United States	....	Confluent	48	
1321	M	31	United States	S	Ch 31	United States	....	Confluent	69	
1322	M	30	United States	S	Ch	United States	....	Discrete	54	
1323	M	26	Germany	S	13	Germany	....	Confluent	21	
1324	M	4m	United States	S	....	....	....	Confluent	11	D
1325	M	23	United States	S	....	....	....	Discrete	44	
1326	M	32	United States	S	....	....	....	Discrete	15	D
1327		19	United States	S	Ch	United States	F	Discrete	24	
1328		38	United States		Ch	United States	G	Discrete	14	
1329	M	30	Ireland	S	Ch	Ireland	G	Discrete	8	
1330	M	2	United States	S	....	....	....	Confluent	12	D
1331	M	36	United States		....	....	....	Confluent	7	D
1332	M	18m	United States	S	....	....	....	Confluent	9	D
1333	M	25	United States	S	....	....	....	Confluent	11	D
1334		34	United States		....	....	....	Confluent	37	
1335		2	United States	S	....	....	....	Confluent	10	D
1336	M	33	United States	S	Ch	United States	F	Discrete	21	
1337	M	14	United States	S	....	....	....	Discrete	32	
1338		30	United States		28	United States	B	Confluent	31	
1339	M	5	United States	S	5	United States	B	Discrete	19	
1340	M	3	United States	S	3	United States	F	Discrete	22	
1341		4	United States	S	....	....	....	Confluent	11	D
1342	M	28	United States	S	12	United States	B	Confluent	9	D
1343		4	United States	S	....	....	....	Hemorrhagic	30	
1344		12	Ireland	S	....	....	....	Confluent	35	
1345		12	United States	S	....	....	....	Discrete	35	
1346	M	10	United States	S	....	....	....	Discrete	35	
1347	M	7	United States	S	....	....	....	Discrete	35	
1348		5	United States	S	....	....	....	Discrete	19	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
1349	M	4	United States	S				Discrete	40	
1350		29	Poland					Hemorrhagic	13	D
1351	M	15	United States	S				Confluent	55	
1352	M	4	United States	S				Confluent	28	
1353	F	2	United States	S				Confluent	28	
1354	M	27	Ireland	S	Ch	Ireland	F	Discrete	29	
1355		33	United States					Confluent	9	D
1356	M	1	United States	S				Confluent	10	D
1357		23	Ireland	S				Hemorrhagic	8	D
1358	M	32	United States	S	Ch	United States	F	Discrete	32	
1359		3	United States	S				Discrete	21	
1360	M	4	United States	S				Confluent	9	D
1361		23	United States	S	Ch	United States	G	Discrete	16	
1362	M	40	England	S				Confluent	8	D
1363		65	Germany	S	Ch	Germany	F	Discrete	26	
1364		30	United States	S	Ch	United States		Discrete	15	
1365		2w	United States	S				Discrete	10	D
1366	M	3	United States	S				Hemorrhagic	5	D
1367		39	United States	S	Ch	United States	F	Discrete	18	
1368	M	3	United States	S				Discrete	27	
1369	M	12	United States	S	I	United States	B	Confluent	34	
1370	M	27	United States	S	27	United States		Discrete	12	
1371	M	29	Canada	S				Confluent	17	D
1372	M	28	United States	S	Ch	United States	F	Discrete	13	
1373	M	4	United States	S				Confluent	12	D
1374	M	5	United States	S				Confluent	14	D
1375	M	2	United States	S				Confluent	10	D
1376	M	8	United States	S				Confluent	10	D
1377	M	6	United States	S				Confluent	12	D
1378		4	United States	S	I	United States	B	Discrete	12	
1379	M	19	United States	S	Ch	United States	B	Discrete	52	
1380	M	6	Bohemia	S	6		F	Confluent	11	D
1381	M	9	Bohemia	S	I	Bohemia	G	Discrete	14	
1382		3	Bohemia	S				Confluent	28	
1383	M	50	United States	S	Ch	United States	F	Discrete	15	
1384	M	45	Ireland	S	Ch	Ireland	F	Confluent	14	D
1385	M	6	Bohemia	S				Confluent	29	
1386	M	5	Poland	S				Confluent	14	D
1387		2	Poland	S				Confluent	14	D
1388		6	Poland	S				Confluent	38	
1389		7	Poland	S				Confluent	41	
1390	M	21	Bohemia		Ch	Bohemia	F	Discrete	32	
1391	M	50	United States		45	United States	F	Discrete	36	
1392	M	22	Holland					Confluent	46	
1393		18m	United States	S	I	United States	B	Discrete	14	
1394		80	United States	S	60	United States		Confluent	16	D
1395		19	Poland	S				Confluent	52	
1396	M	16	Bohemia	S	Ch	Bohemia	B	Confluent	51	
1397		51	Ireland		Ch	Ireland	G	Discrete	15	
1398		30	Bohemia		Ch	Bohemia	F	Discrete	16	
1399		24	United States					Confluent	63	
1400		28	United States	S	Ch	United States	B	Confluent	57	
1401	M	21	United States	S	Ch	United States	F	Discrete	21	
1402	M	1	Sweden	S				Confluent	12	D
1403	M	7	Sweden	S	I	Sweden	F	Confluent	31	
1404	M	21	United States	S				Confluent	11	D
1405	M	35	Germany	S	Ch	Germany	F	Discrete	25	
1406		3	Germany	S				Confluent	16	D
1407	M	23	Norway	S	23	United States	G	Discrete	21	
1408	M	11	Bohemia	S				Discrete	39	
1409	M	41	Bohemia	S	Ch-33	Bohemia-U. S.	G	Discrete	16	
1410	M	80	Sweden	S				Confluent	12	D

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
1411		20	Ireland	S	Ch	Ireland	F	Discrete	13	
1412		14	Italy	S	Ch	Italy	F	Discrete	41	
1413	M	5m	Germany	S	....	....	....	Confluent	21	D
1414	M	20	United States	S	....	....	....	Discrete	39	
1415		24	Sweden		Ch	Sweden	F	Discrete	21	
1416	M	22	Canada	S	....	....	....	Confluent	25	D
1417		3	United States	S	....	....	....	Discrete	27	
1418	M	6	Sweden	S	....	....	....	Confluent	27	
1419		8	United States	S	....	....	....	Confluent	35	
1420	M	3	United States	S	....	....	....	Discrete	17	
1421		29	Sweden		Ch	Sweden	F	Discrete	24	
1422	M	22	Germany	S	....	....	....	Confluent	44	
1423	M	24	United States	S	....	....	....	Hemorrhagic	42	D
1424	M	25	Norway	S	Ch	Norway	F	Confluent	32	
1425	M	27	Ireland	S	....	....	....	Confluent	44	
1426	M	43	Ireland	S	Ch	Ireland	G	Confluent	35	
1427		37	Germany		Ch	Germany	G	Discrete	14	
1428		11	United States	S	....	....	....	Confluent	33	
1429		20	Bohemia	S	....	....	....	Confluent	9	D
1430	M	53	Germany	S	....	....	....	Hemorrhagic	....	D
1431	M	52	Norway	S	Ch	Norway	F	Discrete	17	
1432	M	24	United States		I	United States	B	Confluent	12	D
1433	M	37	United States	S	....	....	....	Discrete	11	
1434	M	34	United States	S	....	....	....	Confluent	101	
1435		31	Bohemia		Ch	Bohemia	F	Discrete	31	
1436	M	38	Ireland	S	Ch	Ireland	B	Confluent	60	
1437	M	27	United States	S	Ch	United States	F	Discrete	15	
1438	M	23	Germany	S	Ch	Germany	F	Discrete	16	
1439		4	Germany	S	....	....	....	Discrete	15	
1440		2m	Poland	S	....	....	....	Discrete	9	D
1441	M	73	Germany	S	Ch	Germany	F	Confluent	52	
1442	M	38	United States		28	United States	G	Discrete	23	
1443	M	28	Ireland	S	....	....	....	Confluent	15	D
1444	M	74	Germany		Ch	Germany	F	Discrete	9	
1445		26	United States		Ch	United States	F	Discrete	20	
1446	M	34	United States	S	Ch	United States	F	Discrete	10	
1447	M	4	Germany	S	....	....	....	Confluent	11	D
1448	M	10	Bohemia	S	....	....	....	Confluent	33	
1449		7m	Bohemia	S	....	....	....	Confluent	20	
1450	M	36	United States		Ch	United States	....	Hemorrhagic	27	D
1451		32	Ireland		Ch	Ireland	G	Discrete	14	
1452	M	16m	United States	S	....	....	....	Confluent	14	D
1453	M	36	Bohemia		Ch	Bohemia	....	Confluent	....	D
1454		8	Poland	S	....	....	....	Confluent	24	
1455	M	5	United States	S	....	....	....	Discrete	16	
1456	M	31	Ireland		Ch	Ireland	F	Discrete	22	
1457	M	22	Germany	S	Ch	Germany	G	Discrete	19	
1458		24	Sweden		Ch	Sweden	G	Discrete	17	
1459		19	Germany	S	....	....	....	Confluent	31	
1460		16	United States	S	....	....	....	Confluent	21	
1461		38	Bohemia		Ch	Bohemia	F	Confluent	28	
1462		29	United States		Ch	....	B	Hemorrhagic	13	D
1463	M	29	United States	S	17	United States	B	Confluent	11	D
1464		5	Germany	S	....	....	....	Discrete	19	
1465	M	5	Germany	S	....	....	....	Confluent	15	
1466		39	Holland		Ch	Holland	F	Confluent	24	
1467		17	Germany	S	....	....	....	Hemorrhagic	12	D
1468		28	Ireland		Ch	Ireland	F	Confluent	29	
1469	M	23	Germany	S	Ch	Germany	F	Discrete	34	
1470	M	17	United States	S	....	....	....	Confluent	13	D
1471		10	Bohemia	S	....	....	....	Discrete	17	
1472		4	Germany	S	....	....	....	Confluent	....	D

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
1473		5m	United States	S	....	....	....	Confluent	9	D
1474	M	22	United States	S	Ch	United States....	B	Confluent	27	
1475	M	32	Bohemia	S	Ch	Bohemia	B	Confluent	28	
1476		15m	United States	S	....	....	....	Confluent	5	D
1477	M	15	United States	S	....	....	....	Confluent	50	
1478	M	24	Germany.....	S	Ch	Germany.........	B	Hemorrhagic ..	7	D
1479	M	35	United States		Ch	United States....	B	Confluent	32	
1480		24	Bohemia		32	America.........	G	Confluent	33	
1481	M	32	United States	S	....	....	....	Confluent	33	
1482	M	48	Germany.....		Ch	Germany.........	B	Confluent	20	D
1483	M	22	England......	S	Ch	England..........	F	Discrete.........	15	
1484	M	30	United States		....	....	....	Confluent	18	D
1485		26	Bohemia		Ch	Bohemia	B	Confluent	25	
1486		42	Bohemia		Ch	Bohemia	F	Discrete	29	
1487		30	Germany.....		....	....	....	Confluent	35	
1488	M	35	Ireland.......	S	Ch	Ireland...........	B	Confluent	57	
1489	M	22	Ireland.......	S	....	....	....	Confluent	53	
1490		33	Norway		Ch-32	Norway-U. S.....	F	Discrete	15	
1491	M	38	Germany.....	S	Ch	Germany.........	F	Discrete.........	16	
1492	M	36	United States	S	Ch	United States....	B	Confluent	13	D
1493		53	Germany.....		Ch	Germany.........	F	Discrete.........	16	
1494	M	24	United States	S	....	....	....	Confluent	30	
1495		25	Canada......		....	....	....	Confluent	33	
1496	M	21	Germany.....	S	Ch	Germany.........	F	Discrete.........	14	
1497	M	24	United States	S	....	....	....	Confluent	50	
1498	M	41	Bohemia		....	....	....	Confluent	9	D
1499		17	United States	S	....	....	....	Confluent	32	
1500	M	51	Germany.....		Ch	Germany.........	F	Discrete.........	17	
1501		6	Bohemia	S	....	....	....	Discrete.........	17	
1502	M	17	Bohemia	S	Ch	Bohemia	F	Discrete.........	17	
1503	M	8	Germany.....	S	....	....	....	Confluent	34	
1504		2	Bohemia	S	....	....	....	Confluent	10	D
1505		19	Germany.....	S	Ch-19	Germany U. S...	F	Discrete.........	15	
1506		48	Bohemia		Ch	Bohemia	F	Discrete.........	16	
1507		23	Germany.....		....	....	....	Confluent	18	D
1508	M	3	Bohemia	S	....	....	....	Confluent	19	
1509	M	24	Sweden	S	....	....	....	Confluent	15	D
1510		4	Poland	S	....	....	....	Confluent	28	
1511	M	39	United States		....	....	....	Confluent	11	
1512		11	Germany.....	S	....	....	....	Confluent	34	
1513		13	Germany.....	S	....	....	....	Confluent	46	
1514		34	England......		Ch	England..........	F	Discrete.........	17	
1515	M	50	Germany.....		Ch	Germany.........	F	Discrete.........	21	
1516		16	Germany.....	S	Ch	Germany.........	B	Confluent	20	
1517	M	8	Germany.....	S	....	....	....	Confluent	26	
1518	M	37	Ireland.......	S	Ch	Ireland...........	B	Confluent	30	
1519		20	Ireland.......		Ch	Ireland...........	F	Discrete.........	20	
1520		18m	United States	S	Ch	United States....	B	Discrete.........	14	
1521	M	18m	Germany.....	S	....	....	....	Confluent	12	D
1522	M	5	Ireland.......	S	....	....	....	Confluent	8	D
1523		25	Germany.....		25	United States....	B	Discrete.........	26	
1524	M	10	Germany.....	S	Ch	Germany	F	Discrete.........	21	
1525	M	14	United States	S	14	United States....	F	Confluent	28	
1526	M	5	Germany.....	S	....	....	....	Discrete.........	21	
1527	M	53	United States		Ch	United States....	B	Confluent	33	
1528		20	Ireland.......	S	....	....	....	Confluent	11	D
1529		22	Germany.....		....	....	....	Confluent	35	
1530	M	22	United States	S	18	United States....	F	Discrete.........	5	
1531		40	Germany.....		Ch	Germany.........	G	Discrete.........	13	
1532		2	Bohemia	S	....	....	....	Discrete..	18	
1533	M	3	Bohemia	S	....	....	....	Confluent	15	D
1534	M	2m	United States	S	....	....	....	Confluent	10	D

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
1535		14	Germany	S	14	United States	F	Discrete	34	
1536	M	17m	Bohemia	S				Confluent	25	
1537	M	3	United States	S				Discrete	29	
1538		11m	United States	S				Discrete	20	
1539	M	4	Germany	S				Discrete	22	
1540		4	United States	S				Discrete	23	
1541	M	32	United States	S	Ch	United States	F	Discrete	19	
1542		27	Norway	S	Ch	Norway	G	Discrete	17	
1543		18	Germany	S				Discrete	26	
1544	M	36	Scotland		Ch	Scotland.	G	Discrete	21	
1545		11m	Bohemia	S				Confluent	3	D
1546		23	Germany					Confluent	8	D
1547	M	23	Ireland	S	15	United States	B	Confluent	17	D
1548		33	England		Ch	England	F	Discrete	22	
1549		5	United States	S				Discrete	17	
1550		24	Ireland	S				Discrete	18	
1551		22m	United States	S	Ch	United States	F	Discreet	16	
1552		24	Sweden	S				Discrete	13	
1553	M	6	Bohemia	S				Confluent	18	D
1554		3	Bohemia	S				Confluent	34	
1555	M	25	England	S	Ch	England	F	Discrete	20	
1556	M	1m	Italy	S				Confluent	4	D
1557	M	3m	Germany	S				Discrete	13	
1558	M	11	Germany	S				Discrete	23	
1559	M	8	Germany	S				Hemorrhagic	9	D
1560		13	Germany	S				Confluent	41	D
1561		3	Germany	S				Confluent	7	D
1562		5	Germany	S				Confluent	25	D
1563	M	3	Bohemia	S				Confluent	28	
1564		2	Bohemia	S				Confluent	28	
1565	M	15	England	S	Ch	England	F	Discrete	20	
1566	M	30	Germany		Ch	Germany	G	Discrete	11	
1567		21	Norway	S	Ch	Norway	G	Discrete	11	
1568		13m	Germany	S				Confluent	16	D
1569	M	4	United States	S				Confluent	29	
1570		5	Germany	S				Confluent	26	
1571	M	7	Germany	S	7	United States	F	Discrete	26	
1572		8m	Germany	S				Confluent	11	D
1573	M	25	Bohemia	S				Confluent	12	D
1574		14	Holland	S				Confluent	33	
1575		12	Germany	S				Confluent	43	
1576		30	United States		15	United States	F	Confluent	13	
1577	M	36	Germany		Ch	Germany	F	Confluent	27	
1578	M	22	Sweden	S	Ch	Sweden	F	Discrete	18	
1579		2m	Poland	S				Discrete	15	
1580	M	52	Germany		37	United States	G	Discrete	12	
1581		23	Germany					Hemorrhagic		D
1582		4	Poland	S				Discrete	20	
1583		6	Poland	S				Discrete	20	
1584		2	United States	S				Confluent	9	D
1585	M	26	Ireland	S	20	United States	B	Confluent	40	
1586	M	36	Sweden	S	Ch	Sweden	F	Discrete	15	
1587		25	Germany					Confluent	13	D
1588	M	33	United States	S	Ch	United States	B	Confluent	42	
1589	M	2	United States	S				Confluent	23	
1590	M	17	England	S				Confluent	28	
1591		33	Germany					Hemorrhagic	11	D
1592	M	26	England	S	Ch	England	G	Discrete	11	
1593	M	27	Ireland	S	27	United States	G	Discrete	30	
1594		6	United States	S				Confluent	18	
1595	M	10	Poland	S				Confluent	26	D
1596		6	United States	S				Discrete	24	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
1597	M	24	Ireland	S	Ch-24	Ireland-U. S.	....	Discrete	19	
1598	M	21	Ireland	S	Ch-20	Ireland-U. S.	....	Discrete	30	
1599		20	United States		....	....	....	Hemorrhagic	13	D
1600		27	United States		....	....	....	Discrete	34	
1601		2	United States	S	....	....	....	Discrete	14	
1602		35	Germany		Ch	Germany	F	Discrete	25	
1603		66	Germany		Ch	Germany	G	Discrete	12	
1604		42	England		Ch	England	B	Hemorrhagic	4	D
1605	M	35	United States		Ch	United States	B	Discrete	37	
1606	M	3	Poland	S	....	....	....	Confluent	26	D
1607	M	21	Bohemia	S	....	....	....	Confluent	41	
1608		42	Germany	S	Ch	Germany	B	Confluent	29	
1609	M	27	Ireland	S	Ch	Ireland-U. S.	F	Discrete	26	
1610	M	5	United States	S	....	....	....	Confluent	12	D
1611		27	United States		27	United States	F	Discrete	18	
1612		3	United States	S	....	....	....	Discrete	28	
1613		32	Germany	S	Ch	Germany	G	Discrete	10	
1614	M	50	Bohemia		47	United States	B	Confluent	15	D
1615	M	36	Germany		Ch	Germany	G	Discrete	17	
1616		9	United States	S	....	....	....	Discrete	17	
1617		26	Ireland	S	....	....	....	Discrete	19	
1618		3	United States	S	Ch	United States	F	Discrete	16	
1619	M	22	Sweden		....	....	....	Discrete	14	
1620	M	16	Bohemia	S	....	....	....	Confluent	17	D
1621		13	Scotland	S	....	....	....	Confluent	24	
1622	M	26	England	S	Ch	England	F	Discrete	20	
1623	M	1	Italy	S	....	....	....	Confluent	4	D
1624	M	3	Germany	S	....	....	....	Discrete	13	
1625	M	14	Germany	S	....	....	....	Discrete	20	
1626	M	1	United States	S	....	....	....	Hemorrhagic	9	D
1627		17	Germany	S	....	....	....	Confluent	44	D
1628		8	United States	S	....	....	....	Confluent	7	D
1629		15	Germany	S	....	....	....	Confluent	24	D
1630	M	3	Italy	S	....	....	....	Confluent	28	
1631		5	Bohemia	S	....	....	....	Confluent	28	
1632	M	18	England	S	Ch	England	F	Discrete	20	
1633	M	32	Germany		Ch	Germany	G	Discrete	14	
1634		24	Norway	S	Ch	Norway	G	Discrete	14	
1635		2	Germany	S	....	....	....	Confluent	16	D
1636	M	14	United States	S	....	....	....	Confluent	29	
1637		9	Denmark	S	....	....	....	Confluent	26	
1638	M	17	Germany	S	7	United States	F	Discrete	24	
1639		1	Germany	S	....	....	....	Confluent	14	D
1640	M	30	Bohemia	M	....	....	....	Confluent	....	D
1641		15	Holland	S	....	....	....	Confluent	33	
1642		20	Germany	S	....	....	....	Confluent	40	
1643	M	35	United States		15	United States	F	Confluent	13	
1644	M	34	Germany	M	Ch	Germany	F	Confluent	27	
1645		2	United States	S	Ch	United States	B	Discrete	14	
1646	M	4	Germany	S	....	....	....	Confluent	12	D
1647	M	10	Ireland	S	....	....	....	Confluent	18	D
1648		30	Germany		25	United States	B	Discrete	26	
1649	M	15	Germany	S	Ch	Germany	F	Discrete	24	
1650	M	16	United States	S	14	United States	F	Confluent	24	
1651	M	5	Poland	S	....	....	....	Discrete	26	
1652	M	50	United States		Ch	United States	B	Confluent	30	
1653		25	Ireland	S	....	....	....	Confluent	14	D
1654		25	Germany		....	....	....	Confluent	35	
1655	M	20	United States	S	18	United States	F	Discrete	15	
1656		49	Germany		Ch	Germany	G	Discrete	14	
1657		6	Bohemia	S	....	....	....	Discrete	18	
1658	M	13	Norway	S	....	....	....	Confluent	14	D

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
1659	M	2	United States	S	......	......	....	Confluent	10	D
1660		18	Germany	S	14	United States	F	Discrete	34	
1661	M	2	Bohemia	S	......	......	....	Confluent	26	
1662	M	13	United States	S	......	......	....	Discrete	29	
1663		2	United States	S	......	......	....	Discrete	29	
1664	M	6	Germany	S	......	......	....	Discrete	22	
1665		14	Canada	S	......	......	....	Discrete	23	
1666	M	30	United States	S	Ch	United States	F	Discrete	19	
1667		32	Norway	S	Ch	Norway	G	Discrete	17	
1668		18	Poland	S	......	......	....	Discrete	26	
1669	M	32	Scotland		Ch	Scotland	G	Discrete	21	
1670		2	Bohemia	S	......	......	....	Confluent	19	D
1671		30	Germany		......	......	....	Confluent	8	D
1672	M	28	Ireland	S	15	United States	B	Confluent	17	D
1673		36	England		Ch	England	F	Discrete	24	
1674	M	14	Germany	S	......	......	....	Confluent	14	D
1675	M	10	Italy	S	......	......	....	Confluent	33	
1676		1	Bohemia	S	......	......	....	Confluent	10	
1677	M	30	United States		Ch	United States	....	Hemorrhagic	27	
1678		36	Ireland		Ch	Ireland	G	Discrete	15	
1679	M	2	United States	S	......	......	....	Confluent	14	D
1680	M	40	Bohemia		Ch	Bohemia	....	Confluent	34	D
1681		18	Poland	S	......	......	....	Confluent	24	
1682	M	10	Scotland	S	......	......	....	Discrete	14	
1683	M	34	Ireland		Ch	Ireland	F	Discrete	24	
1684	M	30	Germany	S	Ch	Germany	G	Discrete	19	
1685		26	Sweden		Ch	Sweden	G	Discrete	14	
1686		25	Germany	S	......	......	....	Confluent	31	
1687		16	Norway	S	......	......	....	Confluent	20	
1688		40	Bohemia		Ch	Bohemia	F	Confluent	28	
1689		32	England		Ch	......	B	Hemorrhagic	13	D
1690	M	32	United States	S	17	United States	B	Confluent	14	D
1691		5	Germany	S	......	......	....	Discrete	20	
1692	M	5	Denmark	S	......	......	....	Confluent	15	
1693		43	Holland		Ch	Holland	F	Confluent	22	
1694		22	Germany	S	......	......	....	Hemorrhagic	12	D
1695		29	Ireland		Ch	Ireland	F	Confluent	30	
1696	M	27	Germany	M	Ch	Germany	F	Discrete	34	
1697	M	21	United States	S	......	......	....	Confluent	13	D
1698	.	10	Poland	S	......	......	....	Discrete	17	
1699		14	Germany	S	......	......	....	Confluent	14	D
1700		1	United States	S	......	......	....	Confluent	19	D
1701	M	25	United States	M	Ch	United States	B	Confluent	24	
1702	M	36	Bohemia	M	Ch	Bohemia	B	Confluent	28	
1703		2	United States	S	......	......	....	Confluent	...	D
1704	M	20	United States	S	......	......	....	Confluent	50	
1705	M	26	Germany	S	Ch	Germany	B	Hemorrhagic	7	D
1706	M	40	United States		Ch	United States	B	Confluent	32	
1707		42	Bohemia		32	America	G	Confluent	33	
1708	M	34	Canada	M	......	......	....	Confluent	33	
1709	M	48	Germany		Ch	Germany	B	Confluent	24	D
1710	M	26	England	S	Ch	England	F	Discrete	15	
1711	M	31	United States		......	......	....	Confluent	19	D
1712		26	Bohemia		Ch	Bohemia	B	Confluent	28	
1713		45	Poland		Ch	Poland	F	Discrete	29	
1714		32	Germany	S	......	......	....	Confluent	35	
1715	M	36	Ireland	M	Cn	Ireland	B	Confluent	57	
1716	M	25	Scotland	S	......	......	....	Confluent	53	
1717		36	Norway		Ch-32	Norway-U. S.	F	Discrete	15	
1718	M	40	Germany	S	Ch	Germany	F	Discrete	16	
1719	M	38	United States	S	Ch	United States	B	Confluent	13	D
1720		53	Germany		Ch	Germany	F	Discrete	18	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
1721	M	24	United States	S	....	....	....	Confluent	34	
1722		28	Sweden		....	....	....	Confluent	33	
1723	M	21	Germany	S	Ch	Germany	F	Discrete	16	
1724	M	30	United States	S	....	....	....	Confluent	50	
1725	M	41	Bohemia		....	....	....	Confluent	9	D
1726		20	Poland	S	....	....	....	Confluent	32	
1727	M	51	Germany		Ch	Germany	F	Discrete	17	
1728		6	Denmark	S	....	....	....	Discrete	17	
1729	M	19	Bohemia	S	Ch	Bohemia	F	Discrete	17	
1730	M	8	Germany	S	....	....	....	Confluent	34	
1731		3	Sweden	S	....	....	....	Confluent	10	D
1732	M	21	United States	S	16	United States	F	Confluent	28	
1733	M	40	Norway	M	45	....	B	Confluent	37	
1734	M	43	United States	S	....	....	....	Hemorrhagic	8	D
1735	M	28	Scotland	S	....	....	....	Discrete	12	
1736	M	40	United States		Ch	United States	G	Discrete	14	
1737		24	England	S	....	....	....	Confluent	20	
1738		14	Bohemia	S	....	....	....	Confluent	46	
1739	M	60	United States	S	Ch	United States	B	Confluent	27	
1740		18	Germany		....	....	....	Confluent	34	
1741	M	34	Sweden	S	Ch	Sweden	B	Confluent	11	D
1742	M	24	United States	S	....	....	....	Confluent	42	
1743	M	40	Canada		....	....	....	Discrete	38	
1744	M	33	Ireland	S	Ch	Ireland	G	Discrete	16	
1745	M	40	United States	S	Ch	United States	G	Discrete	14	
1746		50	Poland		....	....	....	....	....	D
1747	M	34	Germany	S	Ch	Germany	G	Discrete	10	
1748	M	26	Germany	S	Ch	Germany	F	Discrete	20	
1749		35	Ireland		Ch	Ireland	G	Discrete	16	
1750	M	30	United States	S	....	....	....	Confluent	11	D
1751	M	39	Scotland		....	....	....	Confluent	12	D
1752	M	40	United States		....	....	....	Confluent	30	
1753		23	Ireland	S	23	....	....	Discrete	12	
1754		14	United States	S	4	....	....	Discrete	20	
1755		19	Norway	S	19	....	....	Discrete	34	
1756		25	United States	S	....	....	....	Confluent	12	D
1757	M	32	Ireland	M	....	....	....	Confluent	26	
1758	M	44	United States		Ch	United States	....	Confluent	10	D
1759	M	28	United States	S	....	....	....	Confluent	11	D
1760	M	33	England	M	26	....	....	Confluent	30	
1761		15	Italy	S	....	....	....	Discrete	39	
1762	M	16	Bohemia	S	....	....	....	Confluent	16	
1763		4	United States	S	....	....	....	Confluent	17	
1764		37	Ireland	S	Ch	Ireland	....	Confluent	8	D
1765	M	37	Denmark		Ch	....	....	Confluent	34	
1766	M	16	Germany	S	....	....	....	Confluent	12	D
1767	M	25	Sweden	S	Ch	Sweden	F	Discrete	18	
1768		1	Poland	S	....	....	....	Discrete	15	
1769	M	52	Germany		37	United States	G	Discrete	12	
1770		24	Germany		....	....	....	Hemorrhagic	5	D
1771		14	Bohemia	S	....	....	....	Discrete	20	
1772		10	Poland	S	....	....	....	Discrete	20	
1773		2	United States	S	....	....	....	Confluent	9	D
1774	M	30	Ireland		20	United States	B	Confluent	35	
1775	M	40	Sweden	S	Ch	Sweden	F	Discrete	15	
1776		25	Germany		....	....	....	Confluent	13	D
1777	M	38	United States		Ch	United States	B	Confluent	42	
1778	M	12	Norway	S	....	....	....	Confluent	23	
1779	M	20	England	S	....	....	....	Confluent	30	
1780		33	Germany		....	....	....	Hemorrhagic	11	D
1781	M	30	Canada	S	Ch	Canada	G	Discrete	11	
1782	M	37	Ireland	S	27	United States	G	Discrete	30	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	[7] Result.
					When. [4]	Where. [5]	Result. [6]			
1783		10	United States	S	....	....	....	Confluent	18	
1784	M	10	Poland	S	....	....	....	Confluent	26	D
1785		6	Bohemia	S	....	....	....	Discrete	20	
1786	M	24	Ireland	S	Ch-24	Ireland-U. S.	....	Discrete	19	
1787	M	26	Ireland	S	Ch-20	Ireland-U. S.	....	Discrete	34	
1788		20	United States		....	....	....	Hemorrhagic	13	D
1789		29	Scotland		....	....	....	Discrete	34	
1790		2	United States	S	....	....	....	Discrete	12	
1791		40	Germany		Ch	Germany	F	Discrete	28	
1792		66	Holland		Ch	Germany	G	Discrete	12	
1793		42	England		Ch	England	B	Hemorrhagic	4	D
1794	M	40	United States		Ch	United States	B	Discrete	37	
1795	M	3	Poland	S	....	....	....	Confluent	2	D
1796	M	45	Ireland		Ch	Ireland	F	Confluent	14	D
1797	M	10	Poland	S	....	....	....	Confluent	29	
1798	M	5	Poland	S	....	....	....	Confluent	14	D
1799		2	Bohemia	S	....	....	....	Confluent	14	D
1800		16	Poland	S	....	....	....	Confluent	40	
1801		14	Poland	S	....	....	....	Confluent	41	
1802	M	21	Bohemia		Ch	Bohemia	F	Discrete	32	
1803	M	60	United States		45	United States	F	Discrete	34	
1804	M	22	Holland		....	....	....	Confluent	46	
1805		2	United States	S	I	United States	B	Discrete	14	
1806		75	United States		50	United States	....	Confluent	16	D
1807		26	Poland	S	....	....	....	Confluent	52	
1808	M	16	Russia	S	Ch	Russia	B	Confluent	51	
1809		51	Ireland		Ch	Ireland	G	Discrete	15	
1810		30	England		Ch	England	F	Discrete	18	
1811		24	United States		....	....	....	Confluent	63	
1812		32	United States	S	Ch	United States	B	Confluent	50	
1813	M	21	United States	S	Ch	United States	F	Discrete	21	
1814	M	1	Sweden	S	....	....	....	Confluent	12	D
1815	M	10	Sweden	S	1	Sweden	F	Confluent	31	
1816	M	21	United States	S	....	....	....	Confluent	11	D
1817	M	40	Italy		Ch	Italy	F	Discrete	25	
1818		3	Germany	S	....	....	....	Confluent	16	D
1819	M	33	Norway		23	United States	G	Discrete	21	
1820	M	14	Poland	S	....	....	....	Discrete	39	
1821	M	44	Bohemia	S	Ch-33	Bohemia U. S	G	Discrete	18	
1822	M	80	Sweden		....	....	....	Confluent	12	D
1823		30	Ireland		Ch	Ireland	F	Discrete	15	
1824		20	Italy	S	Ch	Italy	F	Discrete	40	
1825	M	1	Germany	S	....	....	....	Confluent	21	D
1826	M	25	United States	S	....	....	....	Discrete	35	
1827		30	Poland		Ch	Poland	F	Discrete	20	
1828	M	22	Canada	S	....	....	....	Confluent	25	D
1829		13	Sweden	S	....	....	....	Discrete	27	
1830	M	10	United States	S	....	....	....	Confluent	25	
1831		18	Denmark	S	....	....	....	Confluent	40	
1832	M	5	United States	S	....	....	....	Discrete	15	
1833		32	Sweden		Ch	Sweden	F	Discrete	24	
1834	M	25	Germany	S	....	....	....	Confluent	40	
1835	M	24	United States	S	....	....	....	Hemorrhagic	....	D
1836	M	25	Norway	S	Ch	Norway	F	Confluent	32	
1837	M	30	England	S	....	....	....	Confluent	40	
1838	M	40	Ireland		Ch	Ireland	G	Confluent	30	
1839		40	Germany		Ch	Germany	G	Discrete	16	
1840		14	Poland	S	....	....	....	Confluent	33	
1841		25	Bohemia	S	....	....	....	Confluent	9	D
1842	M	51	Holland	S	....	....	....	Hemorrhagic	10	D
1843	M	52	Norway	S	Ch	Norway	F	Discrete	17	
1844	M	24	United States		I	United States	B	Confluent	12	D

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
1845	M	40	Ireland					Discrete	14	
1846	M	34	United States	S				Confluent	101	
1847		31	Bohemia		Ch	Bohemia	F	Discrete	31	
1848	M	38	France	S	Ch	France	B	Confluent	60	
1849	M	30	United States	S	Ch	United States	F	Discrete	14	
1850	M	23	Germany	S	Ch	Germany	F	Discrete	16	
1851		10	Canada	S				Discrete	15	
1852		1	Poland	S				Discrete	9	D
1853	M	25	Germany	S	14	United States		Confluent	20	
1854	M	27	United States	S	17			Confluent	15	D
1855		6	United States	S				Confluent	20	
1856	M	40	England		Ch	United States		Discrete	40	
1857		20	England	S				Confluent	40	
1858		23	Germany		Ch-23	Germany-U. S		Discrete	18	
1859	M	28	Germany		Ch-14	Germany-U. S		Discrete	40	
1860		10	Bohemia	S				Confluent	24	
1861	M	18	Poland	S				Confluent	30	
1862		3	Poland	S				Confluent	10	D
1863	M	39	Germany	S	Ch	Germany		Discrete	36	
1864		4	United States	S				Confluent	10	D
1865		23	United States		Ch-23	United States		Discrete	16	
1866	M	40	Canada		Ch	United States		Discrete	35	
1867	M	18	United States	S				Confluent	10	D
1868	M	5	United States	S				Confluent	15	D
1869	M	23	United States	S				Confluent	14	D
1870		20	Bohemia	S	Ch	Bohemia		Discrete	25	
1871	M	34	United States	S	I	United States		Hemorrhagic	10	D
1872	M	35	United States	S	I	United States		Hemorrhagic	8	D
1873		14	Bohemia	S	Ch	United States		Discrete	17	
1874		10	Bohemia	S				Discrete	20	
1875	M	19	United States	S				Confluent	41	
1876	M	4	United States	S				Confluent	15	
1877	M	9	United States	S				Confluent	26	
1878	M	28	Ireland		Ch	Ireland		Discrete	15	
1879	M	22	Norway	S				Discrete	23	
1880		40	England		Ch	England		Confluent	29	
1881		40	Scotland					Discrete	7	
1882	M	36	Sweden	S	Ch	Sweden		Discrete	13	
1883	M	37	United States	S				Discrete	19	
1884	M	4	United States	S	4	United States		Discrete	28	
1885	M	18	Germany	S	Ch	Germany		Discrete	28	
1886	M	45	Italy		14	United States		Discrete	42	
1887	M	19	United States	S				Confluent	18	D
1888		1	United States	S				Confluent	10	D
1889	M	4m	United States	S				Confluent	11	D
1890	M	26	Norway	S				Discrete	40	
1891	M	33	United States	S				Discrete	18	D
1892		22	United States	S	Ch	United States	F	Discrete	24	
1893		40	Canada		Ch	Canada	G	Discrete	14	
1894	M	36	Ireland	S	Ch	Ireland	G	Discrete	8	
1895	M	2	United States	S				Confluent	12	D
1896	M	36	Canada					Confluent	7	D
1897	M	2	United States	S				Confluent	9	D
1898	M	26	England					Confluent	11	D
1899		40	Italy					Confluent	37	
1900		2	United States	S				Confluent	10	D
1901	M	36	Sweden		Ch	Sweden	F	Discrete	21	
1902	M	18	United States	S				Discrete	30	
1903		35	Sweden		28	Sweden	B	Confluent	31	
1904	M	8	United States	S	5	United States	B	Discrete	19	
1905	M	10	United States	S	3	United States	F	Discrete	22	
1906		4	United States	S				Confluent	11	D

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
1907	M	28	Norway		12	Norway	B	Confluent	9	D
1908		14	United States	S				Hemorrhagic	25	
1909		12	Ireland	S				Confluent	35	
1910		16	Germany	S				Discrete	30	
1911	M	13	Germany	S				Discrete	25	
1912	M	7	United States	S				Discrete	35	
1913		5	United States	S				Discrete	19	
1914	M	4	United States	S				Discrete	40	
1915		29	Poland					Hemorrhagic	13	D
1916	M	15	Bohemia	S				Confluent	55	
1917	M	6	Sweden	S				Confluent	29	
1918	F	4	United States	S				Confluent	30	
1919	M	27	Ireland		Ch	Ireland	F	Discrete	29	
1920		33	Ireland					Confluent	9	D
1921	M	1	United States	S				Confluent	10	D
1922		23	Ireland	S				Hemorrhagic	8	D
1923	M	32	England	S	Ch	England	F	Discrete	32	
1924		3	Poland	S				Discrete	21	
1925	M	4	United States	S				Confluent	9	D
1926		28	United States	S	Ch	United States	G	Discrete	15	
1927	M	40	England	S				Confluent	8	D
1928		68	Germany	S	Ch	Germany	F	Discrete	28	
1929		30	Germany	S	Ch	United States		Discrete	15	
1930		2w	United States	S				Discrete	10	D
1931	M	3	United States	S				Hemorrhagic	5	D
1932		39	Norway	S	Ch	Norway	F	Discrete	18	
1933	M	5	United States	S				Discrete	27	
1934	M	16	United States	S	I	United States	B	Confluent	34	
1935	M	27	Poland	S	27	Poland		Discrete	12	
1936	M	29	Canada	S				Confluent	17	D
1937	M	30	Bohemia	S	Ch	Bohemia	F	Discrete	13	
1938	M	4	United States	S				Confluent	12	D
1939	M	5	Bohemia	S				Confluent		D
1940	M	4	United States	S				Confluent	12	D
1941	M	8	Italy	S				Discrete	10	D
1942	M	6	United States	S				Confluent	12	D
1943		6	United States	S	I	United States	B	Discrete	12	
1944	M	19	Poland	S	Ch	Poland	B	Discrete	52	
1945	M	38	Norway		Ch	Norway		Discrete	16	
1946	M	4	United States	S				Confluent	10	D
1947		8	Poland	S				Discrete	13	
1948		22	Poland					Discrete	23	
1949		30	Bohemia		Ch	Bohemia		Discrete	16	
1950		20	Bohemia		Ch	United States		Discrete	8	
1951	M	14	United States	S				Discrete	16	
1952		10	United States	S				Discrete	20	
1953	M	5	United States	S	3			Discrete	9	
1954	M	22	Norway	S	Ch	Norway		Discrete	50	
1955		8	United States	S				Confluent	20	
1956		3	United States	S				Discrete	31	D
1957	M	5	United States	S				Confluent	9	
1958		26	Bohemia		Ch	Bohemia		Discrete	15	
1959	M	4	United States	S				Discrete	12	
1960		1	United States	S				Discrete	43	
1961		4	United States	S				Discrete	18	
1962		7	United States	S				Confluent	19	
1963		10	Poland	S				Discrete	10	
1964		5	United States	S				Discrete	18	
1965	M	37	Canada					Discrete	15	
1966	M	2	United States	S				Discrete	16	
1967	M	40	China	S	26			Discrete	16	
1968	M	32	Ireland					Confluent	20	D

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
1969		6	Poland					Confluent	14	D
1970	M	30	Poland	S				Discrete	27	
1971	M	30	Poland					Confluent	11	D
1972	M	15	Bohemia	S				Discrete	25	
1973	M	20	Germany	S				Discrete	12	
1974	M	50	Germany		Ch	Germany		Discrete	14	
1975		30	United States	S	28	United States		Discrete	23	
1976		3m	United States	S				Discrete	13	
1977		8	United States	S	6			Discrete	18	
1978		9	United States	S				Confluent	...	D
1979	M	8	United States	S	Ch			Discrete	9	D
1980		6	United States	S				Discrete	15	
1981	M	27	Ireland	S	Ch	Ireland		Confluent	6	D
1982		30	Germany		Ch	Germany		Discrete	28	
1983	M	5	United States	S				Confluent	7	D
1984		40	Germany		Ch	Germany		Confluent	13	D
1985	M	28	United States	S	23			Discrete	41	
1986	M	36	Ireland					Confluent	34	
1987	M	24	Ireland	S	Ch	Ireland		Discrete	9	
1988	M	4	United States	S				Confluent	5	D
1989	M	34	United States	S				Confluent	11	D
1990	M	40	England		Ch	England		Discrete	39	
1991	M	36	United States					Confluent	12	D
1992	M	4	United States	S	Ch			Discrete	9	
1993	M	10	United States	S				Confluent	15	D
1994		6	United States	S				Confluent	8	D
1995	M	9	United States	S				Confluent	10	D
1996		5	United States	S				Confluent	33	
1997		8	Poland	S				Confluent	10	D
1998	M	10	United States	S				Confluent	25	
1999		3	Poland	S				Confluent	25	
2000	M	18	United States	S	12			Discrete	23	
2001	M	28	Norway	S				Confluent	40	
2002	M	30	Sweden		Ch	Sweden		Discrete	24	
2003	M	28	United States					Confluent	10	D
2004	M	6	United States	S				Discrete	22	
2005	M	1	United States	S				Confluent	4	D
2006	M	26	Ireland		Ch	Ireland		Discrete	13	
2007	M	30	United States		Ch	United States		Discrete	40	
2008	M	24	United States	S				Confluent	9	D
2009		2	Bohemia	S				Confluent	10	D
2010		6	Bohemia	S				Discrete	30	
2011	M	4	Bohemia	S				Discrete	18	
2012	M	25	Ireland	S				Discrete	8	
2013	M	26	Austria					Confluent	28	D
2014	M	32	United States		Ch	United States		Confluent	15	D
2015	M	24	Italy	S	17	United States		Discrete	17	
2016	M	28	Italy		28	Italy		Discrete	11	
2017		50	Norway					Confluent	..	D
2018		30	United States	S	20			Discrete	21	
2019		3	United States	S				Discrete	20	
2020		30	Sweden		18			Discrete	27	
2021	M	50	United States		47			Discrete	20	
2022	M	26	Germany	S	Ch	Germany		Confluent	39	
2023	M	36	Germany	S				Confluent	50	
2024		40	Germany		Ch	Germany		Discrete	15	
2025	M	34	Italy		Ch	Italy		Confluent	31	
2026	M	32	Italy		Ch			Discrete	24	
2027	M	25	Italy	S	Ch	Italy		Confluent	34	
2028		31	United States	S	Ch	United States		Discrete	14	
2029	M	22	United States	S				Confluent	25	
2030	M	18	Germany	S				Confluent	25	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
2031	M	20	Germany	S				Confluent	17	D
2032		26	United States		20			Discrete	30	
2033	M	27	United States		27			Confluent	16	D
2034		30	Sweden		Ch	Sweden	G	Discrete	24	
2035	M	66	Sweden		44			Discrete	34	D
2036	M	24	Germany	S	13			Discrete	15	
2037	M	24	United States	S				Confluent	12	D
2038	M	10	Germany	S				Confluent	30	
2039	M	24	United States	S				Confluent	50	
2040	M	19	Poland	S				Confluent	27	
2041		8	United States	S				Hemorrhagic	8	D
2042		10	United States	S	Ch			Hemorrhagic	7	D
2043	M	40	Germany		I-23	Germany	F	Discrete	24	
2044		30	United States		Ch			Confluent	44	
2045		28	United States		I	United States		Confluent	14	D
2046		8	United States	S				Discrete	22	
2047	M	24	United States	S	18			Discrete	17	D
2048	M	46	Germany	S				Discrete	14	
2049	M	39	Germany		Ch	Germany		Discrete	34	
2050	M	19	Bohemia	S				Discrete	21	
2051		26	Bohemia		Ch			Discrete	11	
2052	M	38	United States		Ch	United States		Hemorrhagic	10	D
2053		46	Canada		32			Discrete	7	
2054	M	34	Ireland	S				Confluent	16	D
2055	M	18	Ireland	S	Ch	United States		Discrete	44	
2056		24	Germany	S				Discrete	34	
2057	M	22	United States	S				Confluent	56	
2058	M	7	United States					Confluent	10	D
2059	M	27	United States	S	Ch	United States		Confluent	23	D
2060		32	Canada				B	Confluent	10	D
2061		30	United States	S	Ch	United States	G	Discrete	24	
2062		6	United States	S	2			Discrete	18	
2063		36	United States		30			Discrete	18	
2064	M	20	United States	S				Confluent	18	D
2065	M	20	Bohemia	S				Discrete	16	
2066	M	25	United States	S				Confluent	14	D
2067	M	32	United States	S	28			Confluent	50	
2068	M	24	United States	S	18			Discrete	20	
2069		21	Poland					Discrete	14	
2070	M	42	Poland		39			Confluent	35	
2071		30	Poland		Ch	United States		Confluent	40	
2072		10	United States	S	10			Discrete	17	
2073	M	27	Norway	S				Confluent	40	
2074	M	22	Norway	S				Confluent	32	
2075	M	40	Sweden	S				Confluent	34	
2076	M	38	United States	S	Ch			Discrete	36	
2077	M	24	Germany	S	Ch			Discrete	22	
2078		60	Ireland		Ch			Discrete	12	
2079		40	Germany	S	Ch			Discrete	14	
2080	M	38	Sweden	S	Ch	Sweden		Discrete	34	
2081	M	18	United States	S	Ch	United States		Discrete	26	
2082	M	33	Germany	S				Discrete	40	
2083		22	Germany	S				Confluent	19	D
2084	M	1m	United States	S				Confluent	10	
2085	M	30	Germany		Ch	Germany		Discrete	12	
2086	M	32	United States	S				Confluent	20	
2087	M	20	United States	S				Hemorrhagic	3	D
2088	M	38	Ireland	S	15	United States	G	Discrete	29	
2089	M	36	Ireland	S				Confluent	29	
2090		14	United States	S				Discrete	43	
2091	M	64	Germany		Ch	United States		Discrete	20	
2092	M	30	Germany	S	I	United States	B	Discrete	18	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
2093	M	16	United States	S				Discrete	48	
2094		29	United States	S				Discrete	18	D
2095	M	70	Sweden		51	United States	G	Discrete	20	
2096	M	18m	United States	S				Discrete	24	
2097	M	27	Sweden	S	I	Sweden	G	Discrete	9	
2098	M	29	United States	S	29	United States	G	Discrete	14	
2099	M	30	Ireland	S	I–30	Ireland U. S	G	Discrete	14	
2100	M	14	Bohemia	S	Ch			Discrete	13	
2101	M	30m	United States	S				Discrete	8	D
2102		8	United States	S				Confluent	11	D
2103	M	40	United States		I–40	United States	G	Discrete	25	
2104	M	48	Sweden		I–42	Sweden-U. S.	G	Discrete	18	
2105	M	24	Ireland	S	I	Ireland	G	Discrete	14	
2106	M	42	Sweden	S	I–31	Sweden-U. S.	G	Discrete	21	
2107	M	26	Sweden	S				Discrete	25	
2108	M	44	Sweden	S				Confluent	29	
2109	M	28	England	S						D
2110	M	50	England	S				Discrete	10	
2111	M	40	Denmark	S				Discrete	10	
2112	M	26	United States	S						D
2113	M	36	Poland	S	Ch	United States	F	Discrete	14	
2114	M	38	England	S	Ch–34	England-U. S	G	Discrete	14	
2115		24	Germany		I	Germany	G	Discrete	19	
2116		14	United States	S	Ch	United States	F	Discrete	17	
2117	M	20	United States	S				Confluent	25	
2118	M	26	Bohemia	S				Confluent	13	D
2119	M	30	Germany	S	I	Germany	F	Discrete	14	
2120	M	32	United States	S	I	United States	F	Discrete	12	
2121	M	45	United States	S	Ch	United States		Confluent	42	
2122		26	Bohemia	S				Discrete	26	
2123	M	36	Sweden		I	Sweden	G	Discrete	26	
2124	M	16	United States	S	I	United States	F	Discrete	12	
2125	M	3m	United States	S	I	United States		Discrete	9	
2126	M	50	Italy		I	Italy	B	Discrete	7	
2127	M	15m	United States	S	I	United States	F	Discrete	15	
2128	M	36	Norway		I	Norway	F	Discrete	14	
2129		3	United States	S				Discrete	10	
2130	M	40	Germany	S				Discrete	8	
2131	M	30	United States					Confluent	64	
2132	M	24	United States	S	Ch	United States	B	Discrete	6	
2133	M	50	Switzerland		I			Discrete	28	
2134		15m	United States	S				Discrete	26	
2135	M	26	Poland	S				Confluent	25	D
2136	M	19	Canada	S				Confluent	19	D
2137	M	17	United States	S	Ch			Discrete	30	
2138		24	England		I	England	G	Discrete	40	
2139		26	Bohemia	S				Discrete	20	
2140	M	35	United States		Ch	United States	G	Discrete	14	
2141	M	28	Germany		Ch		G	Discrete	20	
2142		24	Poland	S				Confluent	19	D
2143	M	40	China					Confluent	19	D
2144		19	United States	S				Discrete	11	
2145	M	1m	United States	S						D
2146	M	56	Holland					Discrete	6	
2147	M	37	England	S				Discrete	17	
2148		26	Scotland					Discrete	10	
2149	M	8	United States	S				Discrete	21	
2150	M	50	Germany	S	Ch	Germany	B	Discrete	16	D
2151	M	36	Poland		Ch	Poland	G	Discrete	22	
2152	M	38	Poland		I	Poland	B	Discrete	26	
2153	M	24	United States	S	Ch			Discrete	39	
2154		24	Germany	S	Ch	Germany	F	Discrete	26	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
2155	M	30	England		I	England	G	Discrete	12	
2156		29	United States	S	Ch	United States		Discrete	27	
2157	M	36	Sweden	S				Discrete	35	
2158		38	Germany					Discrete	10	
2159	M	35	Germany					Discrete	36	
2160	M	....	United States	S				Discrete	6	
2161	M	50	United States		Ch	United States	G	Confluent	12	D
2162		52	Germany					Confluent	30	
2163		53	Germany					Discrete	16	
2164		13	United States	S				Confluent	28	
2165		12	United States	S				Discrete	14	
2166		40	England					Confluent	36	
2167	M	34	England	S				Discrete	16	
2168	M	30	United States					Discrete	26	
2169		42	Sweden	S				Discrete	26	
2170	M	44	Germany	S				Discrete	14	
2171	M	40	United States					Confluent	14	D
2172	M	30	United States	S				Discrete	32	
2173	M	30	United States	S				Confluent	16	D
2174	M	29	Sweden	S				Confluent	10	
2175	M	34	United States					Discrete	12	
2176	M	29	United States	S				Discrete	44	
2177	M	13	United States	S	I	United States	F	Discrete	16	
2178		8	United States	S				Discrete	9	
2179		20	United States	S				Discrete	10	
2180	M	12	United States	S				Confluent	12	D
2181	M	32	Bohemia					Discrete	15	
2182	M	34	Poland					Discrete	16	
2183	M	24	Sweden	S				Discrete	19	
2184	M	25	Germany	S				Confluent	15	
2185	M	66	United States					Discrete	16	
2186	M	44	United States					Discrete	18	
2187	M	30	Ireland	S				Discrete	18	
2188	M	25	Ireland	S				Discrete	14	
2189	M	22	England	S				Discrete	44	
2190		40	France					Confluent	16	D
2191	M	48	Denmark					Discrete	16	
2192	M	30	Canada	S				Confluent	14	D
2193	M	40	Canada					Confluent	22	
2194	M	40	Sweden					Confluent	14	
2195	M	32	Sweden	S				Varioloid	17	
2196	M	28	Germany	S				Confluent	14	
2197	M	14	United States	S				Discrete	11	
2198	M	6	United States	S				Discrete	14	
2199	M	8	United States	S				Discrete	17	D
2200		15	United States	S				Discrete	7	
2201	M	26	Germany	S	Ch	Germany	G	Discrete	17	D
2202	M	40	Germany		21	United States	B	Discrete	45	D
2203	M	70	Norway		Ch	Norway	B	Discrete	27	D
2204	M	34	Sweden					Discrete	18	
2205	M	24	Sweden	S	16	United States	G	Confluent	16	D
2206	M	16m	United States	S				Confluent	12	D
2207	M	36	Switzerland	S	Ch	Switzerland	G	Discrete	18	
2208	M	34	United States	S	Ch–31	United States		Discrete	18	
2209	M	33	United States	S	15	United States	G	Discrete	15	
2210	M	46	Italy		18			Discrete	14	
2211	M	50	Ireland		18			Discrete	20	
2212	M	38	United States		30	United Stated	G	Discrete	14	
2213	M	44	Bohemia		I	Bohemia	G	Discrete	15	D
2214	M	4	United States	S				Confluent	27	
2215	M	26	Canada	S				Discrete	12	
2216		24	United States	S	Ch–19	United States	G	Discrete	19	

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	Nativity.	Social state. [3]	Vaccinated.			Character of Attack.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
2217	M	19	United States	S	Ch	United States	B	Confluent	38	
2218	M	29	United States	S	Ch	United States	G	Confluent	26	
2219	M	42	Poland	S	21-28	Poland		Discrete	15	
2220	M	54	Sweden		Ch	Sweden	F	Confluent	18	D
2221	M	37	Ireland		Ch	Ireland	G	Discrete	17	
2222	M	14	Canada	S				Confluent	30	
2223	M	14	United States	S	Ch	United States	G	Discrete	16	
2224	M	30	United States	S	I-13	United States	F	Discrete	10	
2225	M	24	United States	S				Confluent	34	
2226	M	26	Canada	S	Ch	Canada	G	Discrete	30	
2227		58	United States					Confluent	14	D
2228	M	60	Ireland					Confluent		D
2229	M	28	United States	S				Confluent		D
2230	M	33	United States	S				Confluent		D
2231	M	38	England	S	Ch	England	G	Confluent	19	D
2232	M	74	Bohemia	S				Confluent	24	D
2233	M	4m	United States	S				Confluent	10	D
2234		8	United States	S				Confluent	12	D
2235	M	32	Poland	S	Ch-26	Poland	G	Discrete	15	
2236		15	United States	S	Ch	United States	G	Confluent	20	D
2237		34	Germany	S	Ch-14	Germany	G	Discrete	23	
2238	M	14	Germany	S				Confluent	22	D
2239	M	40	Ireland		I	Ireland		Discrete	12	
2240	M	36	Ireland		Ch-24	Ireland U. S.	G	Confluent	24	
2241	M	14	United States	S				Confluent	20	D
2242		22	United States	S	Ch	United States	G	Confluent	35	
2243	M	30	Sweden	S	Ch	Sweden	G	Varioloid	14	
2244	M	22	Norway	S	Ch-18	Norway-U. S.	G	Varioloid	18	
2245	M	26	United States	S	Ch	United States	G	Confluent	13	D
2246		20	Bohemia	S	Ch-20	Bohemia	G	Confluent	17	D
2247	M	27	United States	S	Ch	United States	G	Discrete	36	
2248	M	26	United States	S	18	United States	G	Confluent	12	D
2249		16	Poland	S				Varioloid	17	
2250	M	18	England	S	Ch	England	B	Discrete	24	
2251		11	Sweden	S	Ch	Sweden	B	Discrete	28	
2252		24	Germany	S	I-8	Germany	G	Discrete	16	
2253	M	56	Germany		Ch	United States	G	Discrete	19	
2254	M	40	Ireland					Discrete	8	
2255	M	29	United States	S	Ch	United States	G	Discrete	17	
2256	M	34	Scotland	S	Ch	Scotland	G	Varioloid	30	
2257	M	46	Norway	S	I	United States	F	Discrete	33	
2258	M	24	United States	S				Confluent	19	D
2259	M	12	Sweden	S						D
2260	M	30	Sweden	S				Confluent	14	D
2261		19m	United States	S				Hemorrhagic	13	D
2262	M	23	Ireland	S	Ch	Ireland	G	Discrete	11	
2263	M	6	United States	S				Confluent	10	D
2264	M	35	Poland	S	Ch	United States	G	Discrete	20	
2265	M	14	Bohemia	S				Discrete	10	D
2266	M	16	Bohemia	S				Discrete	21	
2267		12	Bohemia	S				Hemorrhagic	18	D
2268	M	29	Ireland	S	Ch	Ireland	G	Discrete	15	
2269	M	16	Canada	S				Confluent	44	
2270		12	United States	S				Confluent	15	
2271	M	24	England	S				Discrete	20	
2272	M	3m	United States	S				Confluent	17	D
2273	M	35	England	S	Ch	England	G	Discrete	76	
2274	M	24	United States	S	Ch	United States	G	Confluent	9	D
2275	M	5	United States	S				Discrete	20	
2276		18	Italy	S				Confluent	30	
2277	M	32	Poland	S	Ch-12	Poland	G	Discrete	60	
2278	M	26	United States	S				Confluent	18	D

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STATEMENT OF 2332 CASES OF SMALLPOX—Cont'd.

Number of Case.	Sex. [1]	Age. [2]	NATIVITY.	Social state. [3]	VACCINATED.			CHARACTER OF ATTACK.	Days duration.	Result. [7]
					When. [4]	Where. [5]	Result. [6]			
2279	M	21	United States	S	Ch-12	United States	G	Discrete	24	D
2280	M	8	United States	S	....	....	....	Confluent	34	
2281	M	21	Holland	S	....	....	....	Confluent	30	
2282	M	39	Scotland	S	I	Scotland	G	Discrete	17	D
2283	M	30	Ireland	S	Ch	Ireland	G	Confluent	34	
2284	M	60	Ireland	S	Ch-33	Ireland	....	Discrete	24	
2285		4	United States	S	....	....	....	Discrete	16	
2286	M	50	Germany	S	Ch-18	....	G	Discrete	15	
2287	M	30	Germany	S	Ch	Germany	G	Discrete	75	
2288	M	30	Sweden	S	Ch	Sweden	G	Discrete	9	
2289	M	25	United States	S	18	United States	B	Discrete	18	
2290	M	29	Sweden	S	Ch-25	United States	G	Discrete	20	
2291	M	16	United States	S	....	....	....	Hemorrhagic	10	D
2292		18	Bohemia	S	....	....	....	Confluent	34	
2293	M	32	Norway	S	Ch	Norway	G	Discrete	12	
2294	M	35	Norway	S	Ch-19	Norway	G	Discrete	26	
2295	M	18m	United States	S	....	....	....	Confluent	27	D
2296	M	25	Germany	S	....	....	....	Discrete	30	
2297		36	Germany	S	Ch	Germany	G	Discrete	10	
2298	M	39	France	S	I	France	G	Discrete	15	
2299		22	Ireland	S	....	....	....	Confluent	14	D
2300		42	Ireland	S	....	....	....	Confluent	16	D
2301	M	26	Ireland	S	Ch	United States	G	Confluent	11	D
2302	M	21	United States	S	17	United States	G	Discrete	47	
2303	M	30	Sweden	S	I-25	Sweden-U. S.	G	Discrete	18	
2304	M	26	Sweden	S	....	....	....	Confluent	15	D
2305	M	52	Norway	S	15	Norway	G	Confluent	14	D
2306	M	21	United States	S	....	....	....	Confluent	16	D
2307	M	25	Spain	S	....	....	....	Confluent	30	D
2308	M	25	United States	S	....	....	....	Confluent	12	D
2309		30	Holland		I	Holland	G	Discrete	15	
2310		65	Bohemia		....	....	....	Confluent	18	D
2311	M	20	United States	S	....	....	....	Discrete	24	
2312		25	Ireland		Ch	....	....	Confluent	44	
2313	M	30	Ireland	S	18	Ireland	G	Discrete	14	
2314	M	13	Germany	S	....	....	....	Discrete	19	
2315		36	United States	S	Ch	United States	G	Discrete	28	
2316	M	19	United States	S	19	United States	G	Confluent	35	
2317	M	28	Italy	S	Ch-25	Italy	G	Discrete	19	D
2318	M	33	Ireland	S	Ch-15	Ireland	G	Discrete	7	
2319	M	31	Ireland	S	Ch	Ireland	G	Discrete	30	
2320	M	4m	United States	S	....	....	....	Discrete	34	
2321		26	Poland		Ch	....	....	Confluent	30	
2322	M	5m	United States	S	....	....	....	Confluent	9	D
2323	M	4	Bohemia	S	....	....	....	Confluent	9	D
2324	M	2w	United States	S	....	....	....	Confluent	11	D
2325		10	United States	S	....	....	....	Discrete	25	
2326	M	3	United States	S	....	....	....	Discrete	20	
2327	M	20	United States	S	Ch	United States	G	Discrete	10	D
2328	M	30	Denmark	S	Ch	....	....	Discrete	14	
2329	M	34	Denmark	S	Ch	United States	G	Discrete	28	
2330	M	22	United States	S	....	....	....	Confluent	14	D
2331	M	33	United States	S	....	....	....	Discrete	24	
2332	M	20	Bohemia	S	....	....	....	Confluent	34	

NOTE.—For the significance of the initial letters, figures, contractions, etc., in these columns, refer to *Explanations* preceding first page of TABULAR STATEMENT.

Report of the Emergency Isolation Hospital: 1894.

J. FRANCIS ADAMS, M. D., *Physician-in-Charge.*

Few people have any conception of the stupendous task devolving upon the Commissioner of Health during the early months of 1894, in connection with the smallpox outbreak of that period. The old city hospital, or "pest house" as it was called, was crowded to a dangerous degree, and an addition which was built thereto was also soon much overcrowded.

As might be expected in cosmopolitan Chicago, with her million and a half population, several districts are so distinctly foreign as to necessitate the employment of interpreters or men of their own nationality to work among them. It was in these districts that the disease flourished and formed the fountain head from which came time after time contagion for the rest of the city. These people resisted every effort of the Department to stamp out the disease. They refused to be vaccinated. They formed mobs to resist the isolation of cases. They secreted cases whenever and wherever they could, and in every conceivable manner blockaded the avenues used by the authorities to drive the pest from the city.

The need of another hospital to relieve the congested state of the old one was evident. But prejudiced people who would rather speak falsely than state the truth in such cases made the plea that graduated or trained nurses could not be procured to nurse smallpox patients—in other words they were afraid of the disease. It was quite clear that this was only a ruse. The Visiting Nurses' Association offered to pay for two months the salaries of as many trained nurses as might be required in a new emergency hospital. This liberal and humane offer was accepted, and a two-story frame building with comfortable capacity for forty patients was erected and equipped. On either side of a graded driveway—furnished with sidewalks—large tents were placed. There were forty-three of these with 14 by 16-foot floors, one foot from the ground. The merits or demerits of tents in the treatment of smallpox I will not here discuss.

That vaccination when properly and successfully performed renders the vaccinated person immune from variola, it would seem there could be no physician to dispute. Yet I must confess that until my recent experience with the disease I was far from being sanguine of its utility as a preventive to the extent I now believe it to be.

The following statistics were taken from a record of cases kept by myself, with special reference to the vaccinal condition of patients noted on their admission to the hospital:

TABLE I. SHOWING CASES DIVIDED INTO VARIOLA AND VARIOLOID.

FORM OF DISEASE.	Admitted.	Died.	Per cent. of deaths.
Variola	208	65	31.25
Varioloid	54	....	......
Total	262	65	24.80

In the above table I have classified as variola the hemorrhagic and confluent cases and those discrete cases in which there was marked secondary fever, with pustulation; also all cases which had never been successfully vaccinated.

I have classified as varioloid all vaccinated cases in which the eruption was short in its course and there was no secondary elevation of temperature. As will be seen from the table there were no deaths among this class.

TABLE II. SHOWING CLASSIFICATION ESPECIALLY OF THE MALIGNANT TYPES, WITH COMPARISONS.

FORM OF DISEASE.	Admitted.	Died.	Per cent. of deaths.
Varioloid	54	...	......
Discrete variola	119	16	13.44
Confluent variola	61	24	39.34
Hemorrhagic variola	17	14	82.35
Purpura variolosa	11	11	100.00
Total	262	65	24.80

The first three divisions in this table require no explanation, but those terms relating to the hemorrhagic varieties may be confusing to some.

Under hemorrhagic variola I have classed those cases in which there are hemorrhages into the vesicle apparently displacing the serum therein. In a few cases hemorrhages occurred into the papule. In most of the cases it occurred at the height of the disease, and in patients where no such tendency seemed to exist, commonly there were patches resembling ecchymoses scattered over the body. Great depression usually manifested itself at the time these hemorrhages took place, and the course of the disease was speedily downward and fatally terminated in most of the cases.

As purpura variolosa I have classified those cases characterized by an entire absence of the initial rash. The true eruption is likewise wanting. In this form the hemorrhages predominate from the beginning. The skin of the trunk is first red, gradually growing darker as blood passes beneath and into it. The limbs, especially of the lower extremity, are covered with petechiæ, forming small ecchymoses. The face is swollen and of a faint purple hue, gradually turning to a darker shade. The conjunctiva is much thickened and deeply congested. As the disease progresses the eye takes on a glassy steel gray appearance.

Free hemorrhages occur from the mouth and nose, and, in females, if near the menstrual period, metrorrhagia ensues. Crusts of dried blood form upon the tongue and lips unless kept moist and frequently washed. The breath has a sickening, fetid odor. The voice is husky and crackling. During the last few hours the fever runs high, and just before death may be 108° or 109° F., as I noted in two of the eleven cases of this class.

The initial symptoms were in some cases quite mild, but in nearly all a constant agonizing pain in the back eclipsed all other subjective symptoms.

The patients of this class—two of whom were women—were with one or two exceptions young, strong and healthy. That drinkers are more susceptible than other persons to this form of variola is manifestly true.

Of nine males, seven were accustomed to take alcoholic stimulants and asked for them when admitted. These had been drinking freely since their illness began, thinking, as they said, to kill the disease.

TABLE III. SHOWING CLASSIFICATION ACCORDING TO TWENTY-ONE YEARS OF AGE.

AGE.	Admitted.	Died.	Per cent. of deaths.
Under 21	133	49	36.84
Over 21	129	16	12.40
Total	262	65	24.80

From this it will be seen that 75 per cent of the deaths occurred in children and young adults. While the course and results of the disease differ widely according to age, the latter seems not to predispose to the attack. Of the 133 patients under twenty-one years of age only twenty-one had been successfully vaccinated, while of the 129 over twenty-one years of age fifty-three had been successfully vaccinated at some time, most of whom had varioloid and recovered.

TABLE IV. SHOWING CLASSIFICATION ACCORDING TO VARIOUS AGES.

AGE.	Admitted.	Died.	Per cent. of deaths.
5 years of age and under	63	31	49.20
6 to 10 years inclusive	38	11	28.94
11 to 21 years inclusive	32	7	21.87
Over 21 years of age	129	16	12.40
Total	262	65	24.80

It will be seen that the mortality in childhood under 5 years of age was a little less than 50 per cent., while in children from 6 to 10 years, inclusive, the mortality was about 20 per cent. less.

Of the 63 cases under 5 years, only 9 had been successfully vaccinated, consequently the great majority suffered from the confluent form, characterized especially by very early depression of the vesicle and great depression of the nervous system.

TABLE V. SHOWING CLASSIFICATION OF PATIENTS ACCORDING TO SEX.

SEX.	Admitted.	Died.	Per cent. of deaths.
Male	153	39	25.49
Female	109	26	23.85
Total	262	65	24.80

While a greater number of males than females were admitted, it will be seen that the death rate was about the same in each. There were 31 females and 43 males giving histories of vaccination and possessing cicatrices, many of which were poor and some almost imperceptible. These I classed as "vaccinated," though, in fact, not a few had passed 3 and 4 times the 7 years' protection we claim vaccination gives. Yet, on this basis, we are many times informed that vaccination does not protect.

TABLE VI. SHOWING CLASSIFICATION ACCORDING TO VACCINE CONDITION OF PATIENTS.

VACCINE CONDITION.			Admitted.	Died.	Per cent. of deaths.
Not vaccinated			188	61	32.44
Vaccinated mostly in childhood, 74	Condition of cicatrices	Good	25	..	.....
		Fair	33	..	.....
		Poor	16	4	25
Total			262	65	24.80

Of 262 cases 188 were never successfully vaccinated; of this number 61 died, that is about 32.50 per cent. Seventy-four had been successfully vaccinated at some time; of this number 54 had varioloid and 20 suffered from variola. Sixteen of these 20 patients had poor marks and most of them were old. It will be seen that the total death rate among the successfully vaccinated cases was only 5.40 per cent.

Eight unvaccinated patients who were admitted early were at once vaccinated. All were successful and reached their height about the time the variola was in the pustular stage. Though all these cases recovered, the disease was apparently unmodified in its course. Yet it would be presumptuous to say that the result would have been the same had vaccination not been performed.

There were admitted five pregnant women, two of whom had been vaccinated by their family physicians just a few weeks previously. The results were fair. These suffered the inconvenience of a varioloidal eruption, which, for a short time, detained them from home. Three were unvaccinated. These all suffered from confluent variola, complicated with abortion, and all ended fatally.

There were five deaths in cases where convalescence was well established. The causes were as follows: Mastoid abscess, one; postpharyngeal abscesses, one; fatty degeneration of the myocardium, one; suppurative nephritis, two.

MT. FOREST, ILL.,
JANUARY 1, 1895.

VACCINATION OF PUBLIC AND PAROCHIAL SCHOOLS.

During the school year ended June 30, 1894, there was a total enrollment of 185 358 pupils in the public schools of the city, who, together with 61 224 pupils of parochial schools, and 4998 teachers in both classes, made up an aggregate of more than a quarter of a million of the population which demanded the attention of the Department with respect to their vaccinal protection. A long period of immunity from smallpox had led to considerable laxity in complying with the ordinance requiring satisfactory evidence of recent successful vaccination as a condition of public school attendance—a matter to which the Commissioner called the attention of the authorities during the summer and fall of 1893 in anticipation of an epidemic of smallpox during the winter. [a.

Notwithstanding the action of the Board of Education, in response to the request that all pupils be required to "again visit their physicians for vaccination," it became evident early in the work of inspection that considerable numbers of school children were still unprotected. Instructions were therefore issued to the inspectors and vaccinators to include the public and parochial schools in their house-to-house work.

A gross tabulation of the results of this work was made toward the end of April, 1894, at which date all of these schools in the exposed districts had been inspected once or oftener. This tabulation showed that more than 30 per cent of those in attendance upon the public schools, and nearly 25 per cent of the parochial scholars, required vaccination or revaccination. On April 21 the inspector in charge of the North Division, Dr. W. A. Kimmitt, reported that he had completed a second circuit of all the schools in his territory, these having an approximate daily attendance of 25 600 scholars. During the first circuit 8000 vaccinations and revaccinations were performed, and during the second circuit 2600 more, making a total of 10 600 vaccinations required.

The ratio of unprotected was even higher in the rest of the city, so that a total of more than 70 000 free vaccinations were performed at the public schools during the year, at the close of which a number of schools in the outlying and little exposed districts were still being dealt with.

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a] See Annual Report of the Department of Health: 1893; pp. 14, 15, 16.

These 70 000 vaccinations were performed among an average daily attendance of 139 322 scholars, out of an aggregate of 185 358 enrolled, being in the ratio of about 50 vaccinations to every 100 scholars in attendance. Many of these, however, were revaccinations or repetitions in cases of failure, so that the 70 000 school vaccinations represent about 42 500 individual scholars. To these are to be added some 21 300 vaccinations performed in the parochial schools, representing about 15 000 individual scholars.

The free school vaccination work of the year covers upward of 90 000 vaccinations and revaccinations, and between 57 000 and 58 000 school children.

The subjoined tabular statement of the work of one vaccinator, Mrs. Clara M. Doolittle, during the month of March, shows the wide disparity which existed between individual schools in the matter of enforcing satisfactory evidence of recent successful vaccination of school children:

SCHOOLS INSPECTED DURING MARCH, 1894.	Average daily March attendance.	Number of vaccinations performed.	Vaccinations per cent. of attendance.
Public.			
Washburne	1357	960	70.0
Foster	1352	520	38.4
Burr	1263	412	32.6
Amerson	506	155	30.6
Rogers	718	186	25.9
Froebel	946	242	25.5
Andrew Jackson	659	160	24.2
Tilden	735	115	15.6
Garfield	1370	212	15.4
Dore	774	105	13.5
Carpenter	1454	160	11.0
Ellen Mitchell	1436	154	10.7
Goodrich	862	78	9.0
Talcott	648	40	6.2
Ryerson	715	35	4.9
Jefferson	742	27	3.6
Totals	15537	3561	22.9
Parochial.			
St. Stanislaus	1800	988	54.9
Evangelical Lutheran	880	437	49.6
St. Procopius	2526	331	12.6
Immaculate Conception	700	83	11.8
St. Bridget's	1520	49	3.2
Totals	7520	1888	25.1

Total number of schools inspected, 21. Total number of scholars inspected, 23 057. Total number of vaccinations performed, 5449. Number of vaccinations to each 100 of school attendance, 23.6.

Report of the Municipal Laboratory: 1894.

ADOLPH GEHRMANN, M. D., *Director.*

The opening of the year 1894 saw the Bureau of Milk Inspection, created by a city ordinance of October 21, 1892, brought under the immediate direction of the Commissioner of Health, and also the establishment of an analytical Laboratory in the City Hall as part of the equipment of the Department. The Laboratory was so far equipped by the first of February that the analysis of milk could be made here instead of at the private laboratories as had been the custom. This brought the office and the analytical work closely together, saving much time and expense. Other lines of investigation have been pursued and a fair equipment of apparatus and supplies has been collected, suitable for all ordinary analyses.

MILK INSPECTION.

The inspection of milk has proceeded upon the same general lines as during the previous year. The enforcement of the regulation requiring the placing of "skimmed milk" tags on milk from which cream has been removed, the prohibition of the use of color and the completion of an accurate directory of milk dealers and stores selling milk has given an abundance of work for all the inspectors. The use of the "skimmed-milk" tag is now general. This has led to the division of the milk supply into two distinct grades—standard milk and "tagged" milk, with prices in accordance. In view of the fact that this skimmed milk, previously also sold as "best" milk, is now eliminated from those samples required to come under the standard of quality, the number of samples of best milk not of standard quality has been greatly reduced. In consequence the general standard of samples received during 1894 is much above the average for 1893.

During the summer inspection of the wholesale trade was commenced and it is now under fair control. Skimmed milk for restaurant purposes is generally "tagged." The use of coloring matter in milk was the usual practice among dealers previous to May, 1894. At that time it was decided to enforce the prohibition of color. Some hundred and forty special notices were sent to dealers, calling attention to this particular requirement of the ordinance. Some time later a number of violations were reported to the City Prosecutor. This had the effect of greatly reducing the amount of colored milk; only occasional offenders are now found and the offense is mainly limited to cream. The use of coloring matter in milk is the chief means to cover the removal of cream. With color prohibited the quality of milk must be improved, as the natural appearance depends much upon the amount of cream contained.

The completion of a full street directory of all firms selling milk and an accurate registration of milk wagons has greatly facilitated the matter of licenses and the locating of persons in the event of prosecution. As the license year is from May to May, the number of applications recorded below does not give the entire number received. The registration of licenses was revised in May and it can be tabulated exactly. About one hundred delinquents were licensed during the months of the year previous to May. Following are the number of applications for milk license during 1894, by months:

Delinquents before May		100
Applicants during	May	1245
	June	781
	July	343
	August	241
	September	152
	October	120
	November	68
	December	56
Total number of licenses issued in 1894		3106
Number of shops licensed		1113
Number of milk wagons licensed		1976
Number of dairies licensed		17
Total, as above		3106

The number and size of milk routes may be shown thus:

Number of firms employing	1 wagon	1261
	2 wagons	175
	3	36
	4	16
	5	6
	6	5
	9	2
	20	1
	24	1
	35	1
	60	1
Number of firms in the milk business		1505

Although many licenses are not procured during May, but few of them are for a part of the year only, so that the amount of money received is in close accord with the total number of licenses. The approximate revenue from 3106 licenses would be $30,000.00.

For the purposes of examination and analysis the inspectors collected 10 127 samples from dealers—on wagons and at depots and shops—and 1465 at railway stations; 450

samples were brought in by dealers and 78 by other individuals—consumers or purchasers.

The samples received and analyzed each month and the results of the analyses are set forth in the first one of the subjoined tables. The quality of the milk supplied to the different wards of the city may be gathered from the statement of the number of samples collected in each ward and examined in the Laboratory, with the results of analyses set forth in the second table.

The following samples were taken at the different railroads:

ROADS.	NO.	GRADE.	BELOW GRADE.
Chicago, Rock Island and Pacific Railway..	108	104	4
Chicago and North-Western Railway.......	184	152	32
Chicago, Milwaukee and St. Paul Railway..	64	62	2
Illinois Central Railroad....................	135	116	19
Chicago, Burlington and Quincy Railroad ..	113	107	6
Pittsburg, Fort Wayne and Chicago Railway,	132	111	21
Chicago and Grand Trunk Railway.........	110	86	24
Monon Route..............................	13	7	6
Chicago and Erie Railroad	82	59	23
Chicago and Eastern Illinois Railroad	45	31	14
Chicago, St. Paul and Kansas City Railway,	73	62	11
Wabash Railroad	43	32	11
Atchison, Topeka and Santa Fé Railroad ...	27	22	5
Wisconsin Central Railroad	8	8	0
Michigan Central Railroad.................	9	9	0
	1146	968	178

I. MILK ANALYSES BY MONTHS: 1894.

MONTHS.	Total number of samples received.	Number of samples collected from dealers.	Number of samples collected from railroads.	Number of samples brought by private persons.	Number of samples brought by dealers.	Number of samples destroyed.	Number of samples analyzed.	Number of samples above grade.	Number of samples below grade.	Number of samples tagged.	Total.
January	1219	1016	149	4	50	......	1219	727	431	61	1219
February	939	767	166	6	......	......	939	452	459	28	939
March	1369	1064	230	8	61	6	1363	670	617	76	1363
April	1336	1039	217	1	78	......	1336	696	564	76	1336
May	1627	1308	217	12	83	7	1620	798	653	169	1620
June	1206	1135	30	4	37	......	1206	580	455	171	1206
July	967	922	......	6	31	8	959	404	213	342	959
August	925	822	50	9	35	9	916	431	303	182	916
September	769	654	98	......	13	4	765	410	228	127	765
October	697	570	127	6	22	......	697	422	170	105	697
November	501	426	65	5	13	2	499	303	100	96	499
December	579	404	116	17	27	5	574	381	127	66	574
Total	12 134	10 127	1465	78	450	41	12 093	6274	4320	1499	12 093

II. MILK ANALYSES BY WARDS: 1894.

WARD.	Number of samples examined.	RESULTS OF ANALYSES.		
		Grade or above.	Below grade.	Tagged.
First	258	108	114	36
Second	351	184	128	39
Third	418	226	107	25
Fourth	483	246	215	22
Fifth	380	173	164	43
Sixth	213	85	109	19
Seventh	154	58	75	21
Eighth	240	77	114	49
Ninth	369	115	181	73
Tenth	220	79	120	21
Eleventh	299	96	134	69
Twelfth	593	226	309	58
Thirteenth	252	98	112	42
Fourteenth	349	75	163	111
Fifteenth	133	40	71	22
Sixteenth	279	56	110	113
Seventeenth	242	49	107	86
Eighteenth	392	105	190	97
Nineteenth	544	171	262	111
Twentieth	273	124	130	19
Twenty-first	488	182	197	69
Twenty-second	329	151	133	45
Twenty-third	405	186	169	50
Twenty-fourth	437	211	184	42
Twenty-fifth	238	140	84	14
Twenty-sixth	108	45	61	2
Twenty-seventh	....	....	....	....
Twenty-eighth	11	3	4	4
Twenty-ninth	340	195	134	11
Thirtieth	391	221	167	3
Thirty-first	46	34	12	....
Thirty-second	383	220	149	14
Thirty-third	38	28	10	....
Thirty-fourth	151	82	69	....
Total	9767	4089	4348	1330

The provisions of the Milk Ordinance can only be maintained by a rigid and systematic prosecution of offenders. The large number of places from which samples of milk are procured and the constant possibility of the condition of the sample being due to some unusual circumstance render it almost impossible to judge what degree of offense shall determine the complaint. The graver offenses of adulteration, addition of coloring matter or of water are always prosecuted; but the offense in samples not of standard quality as to fat or total solid matter is not so easily determined. When complaint is entered in these cases the time for question is past and the case should be tried upon its own merits. The following is the record of complaints:

Skimmed milk not "tagged"	106
Addition of coloring matter	11
Addition of water	9
Feeding slops to cows	34
Selling milk without a license	2
Obstructing an inspector	2
Total complaints	165

Upon these complaints fifty-four judgments were obtained:

Number of twenty-five dollar judgments	49
Number of ten dollar judgments	4
Number of one hundred dollar judgments	1
Total	54

The Department has continued the policy of sending warning notices to dealers whenever samples obtained from them were not in accordance with the full requirements. The practice has been to send two warning notices, and then to procure specially a sample upon which the complaint is to be based.

During the smallpox outbreak in the spring nine milk depots were discovered where there were cases of smallpox. Quarantine against the selling of milk was immediately established and all milk upon the premises at the time was immediately treated with carbolic acid and then turned into the sewers. Two cases of scarlet fever and three cases of diphtheria in milk depots were also investigated. Similar measures were enforced as in the case of smallpox, and the sale of milk was discontinued until the quarantine was raised.

During March it was reported that milk from diseased cows was being shipped from Du Page County. The matter was referred to the State Board of Live Stock Commissioners and they caused the removal and destruction of the cattle. It was learned that an agent of the brewery companies in the city was arranging contracts with dairymen and sending large quantities of brewery grain to them. The results of using this as food for milch cows is seen in the record of analyses of shippers' milk from those railroads over which most of the grain is sent. The flavor of the milk is markedly affected, while the solid constituents are lessened in amount. The butter fat is not materially changed by feeding these grains. If the feeding is persistently practiced, the total solid constituents will fall below the standard of twelve per cent. This has been found to be the case in a number of instances. As far as it is possible, dealers have been advised to investigate the methods of feeding practiced by those sending them milk, and to avoid shippers who are feeding brewery grain. A number of farmers have also been advised to discontinue this food. The deleterious effect of this practice upon the quality of the milk supply is recognized by the Department and every means is used to avoid serious results.

The inspection of dairies having milch cows shows that 188 dairies have been brought under control and are visited regularly. The feeding of brewery and vinegar factory refuse is still persisted in by some of the smaller dairies even in the face of repeated prosecution. These dairies are classed as private persons under the ordinance and are not licensed; on this account they are regulated with difficulty.

A circular letter was directed to all railroad companies entering the city, asking for information as to the amount of milk that they bring to the city daily. From the replies it was learned that about 14,400 cans, of eight gallons each, and 75 eight-gallon cans of cream are transported daily. Beyond this there is a daily production of about 1,800 cans of milk within the city limits that is not handled by railroads. The total supply is then about 16,200 cans, or 518,400 quarts daily. The average daily consumption is about two-thirds of a pint to each individual of population.

The conditions of transportation are such that the milk arrives in the city between ten and eleven o'clock in the morning. The milk dealer receives and places the cans in his own cooling vats until the following morning, when it is delivered. All milk is consequently from twenty-four to thirty hours old before it reaches the consumer. It is during this period that the product is manipulated. Skimmed and colored milk has been the general character of the manipulation. The coloring matters used are not in themselves injurious, but it is a deception, because poor quality is obscured by the appearance. With color entirely removed from the milk supply the general quality must improve, because the natural appearance is not changed. The quality of milk as it arrives from the dairyman has often been questioned. There is little to be feared from this source, as all dealers keep close watch of their shippers and have frequent analyses of the milk made by the Department. Many milk dealers have also introduced appliances for milk analysis into their depots and are thus enabled to watch the product directly as it passes through their hands.

Bacteriologic Diagnosis of Diphtheria.

During September arrangements were completed to make diagnoses of suspicious cases of throat ailments for the physicians of the city. This means of making a diagnosis depends upon the fact that the bacillus or disease-germ of diphtheria grows very rapidly when planted upon solidified blood serum containing grape sugar. In a case of suspected diphtheria a smear of the throat secretion is obtained and applied to this solidified serum. The growth which follows is examined microscopically to determine the presence or absence of the diphtheria bacillus and the physician is at once advised of the result of the examination. Prompt recognition of the true character of a throat ailment is useful in determining the treatment.

Boxes containing tubes of solidified blood serum and throat swabs are supplied gratis to the profession. These boxes, of which an illustration is here given, may be obtained at the Laboratory or from the stations of the Department.

Circular instructions and blank forms for data of information accompany each box—the circular and form reading as follows:

DIPHTHERIA.

*No.*________

*Date*____________ *Time*________

*Duration of Disease*____________

*How Contracted*____________

*Location of Membrane*____________

*Name of Patient*____________ *Age*______

*Address*____________

*Attending Physician*____________

*Address*____________

*Inoculated by*____________

*Received at Laboratory*____________

*Incubator*____________

*Appearance*____________

*Mic. Examination*____________

*No. of Slides*____________

CITY OF CHICAGO.

Department of Health.

Directions for the Use of Cultures in the Diagnosis of Diphtheria.

The wooden cases containing culture tubes and throat swabs may be obtained at any time by a physician or upon his order from the Department Clerk, Room 4, City Hall.

The blank form is to be filled out down to the double lines, and always returned with the case.

When making an inoculation the throat should be first well gargled with plain water to remove mucus and antiseptics. Remove the sterile swab from its tube and, without contact with other objects, rub it firmly against the suspicious area in the throat. Remove the cotton plug from the other tube, and rub the swab over the surface of the culture medium. Replace the swab in its own tube, and replace the cotton plugs. Send the outfit to the Department *at once*.

Cultures from Diphtheria cases should be made as early as possible, as the bacillus sometimes disappears from the throat before the membrane.

In all cases when the outfit is not used, it is to be returned to the Department.

The following is the record of work done in this line during the last sixteen weeks of the year:

Number of examinations made		285
True diphtheria determined	101	
Pseudo-diphtheria determined	142	
Indecisive results	42	
	——	285
Causes of indecisive results—		
Cultures made too late in disease	9	
Delay in delivery at Laboratory	14	
Culture medium contaminated	16	
Culture medium dried up	3	
	——	42
Examinations of convalescent cases to determine disappearance of bacillus		28

The profession has not, as yet, availed itself generally of this means of diagnosis. Thus far the examinations have been almost entirely of very doubtful cases; the greater number were, consequently, found to be cases of false diphtheria.

PREPARATION OF THE ANTITOXIN OF DIPHTHERIA.

During the summer of 1894 the practical application of the anti-diphtheritic serum was announced from Europe. The subject immediately awakened much popular interest. As the method of preparation is difficult and requires much time it was doubtful if it would be supplied from Europe, with the increasing demand for the remedy at home. In view of this it was decided by the Commissioner to produce antitoxin under the direction of the Laboratory. The preliminary work in the preparation of the toxins produced by the diphtheria bacillus was begun during the summer. By November toxins of proper strength and in sufficient quantity had been prepared. Since then two horses have been injected with satisfactory results so far as can be now judged.

The results in the treatment of diphtheria with antitoxin in European hospitals has given such a marked decrease of the death rate that the remedy is certainly of great importance. As a means of immunizing exposed persons in epidemics of the disease it will probably find its greatest value in the preventive work of the Department. Arrangements for its production or purchase should be made, since it will have to be supplied free to the city poor.

ANALYSIS OF THE CITY WATER SUPPLY.

Water is now supplied to the city through four tunnels, the Lake View, Chicago avenue, Fourteenth street and Hyde Park tunnels. From these sources it is distributed through the mains to the following districts of the city.

North of Fullerton avenue the supply is from the Lake View tunnel. South of Fullerton avenue to Harrison street, including the business portion of the South side, water is derived from the Chicago avenue tunnel. The West division south of Harrison street is supplied by mixed water derived from the Chicago avenue and Fourteenth street tunnels. Another portion of this mixed water is delivered to the Stock Yards. The South division to Thirty-ninth street is supplied in part from Chicago avenue and in part from Fourteenth street. Hyde Park, the Town of Lake and in large part the Stock Yards are supplied by the Hyde Park tunnel, at Sixty-seventh street. Samples of water are collected from each of the pumping stations at the shore ends of the tunnels and analyzed weekly. A weekly analysis of the water as it flows from the tap in the Laboratory at the City Hall is also made. Sometimes the samples are collected on different days during the week. At other times they are all taken on the same day. In the reports of the analyses this fact is noted. The examinations made are simply sanitary analyses and include only such features as are of interest or value as determining the drinking quality of the water. In comparing the amounts, in the results of the work during the year as presented below, the following interpretation of results may be of assistance:

All of the numbers are written, of course, in the metric system. The estimations of amounts are in parts by weight in 100,000 parts by weight of water. One part is then equal to one one-thousandth per cent. The total solid matter indicates all mineral or organic matter either suspended or dissolved in the sample. The loss on ignition is that portion of the total solids that can be burned. When the loss is great, more organic matter is present and contamination of the water is shown. Free and albuminoid ammonia also indicate organic matter and more particularly recent contamination. When the free ammonia reaches 0.01 part per 100,000, or the albuminoid ammonia 0.1 part per 100,000 the water must be looked upon with suspicion. When the albuminoid ammonia is relatively higher the contamination is very recent. The chlorides may be due to sewage or simply dissolved salts from minerals. When the chlorides in our water are over 1.5 parts per 100,000 they must be looked upon as coming from sewage. Oxygen absorbed indicates relatively the amount of oxydizable matter, and when the amount of oxygen is high contamination is shown. The bacteria present include all species occurring in the indicated quantity of water upon plate cultivation. The greater number of them occur in all water supplies and are not in the least dangerous. In general when these bacteria are few in number those that may be dangerous are also present in less numbers. Water showing over one thousand bacteria of all kinds to the cubic centimeter is to be looked upon with suspicion and for perfect safety should be boiled. The point of direction from which the wind is blowing is also recorded.

Drinking water is classified as *pure*, *usable*, *suspicious* or *impure*. The analyses of the lake water place it in the class of usable waters; in no case were the results such as to indicate that it was suspicious water. However, there is a marked variation in the results. These differences may be owing to the changes in the flow of sewage into the lake and differences in the direction of the wind, or they may simply be because of variations in the suspended matter in good and bad weather. This turbidity is mainly due to diatoms and finely divided clay held in suspension by agitation from the wind. Estimations are in parts per 100,000.

MONTH OF MARCH.

SOURCE OF SAMPLES.	Total solids.	Loss on ignition.	Free ammonia.	Albuminoid ammonia.	Chlorides.	Oxygen absorbed.	Bacteria, per cubic centimeter.	Turbidity.
**Analyses for week ending March 17:*								
Tap in Laboratory	17.20	7.2	.008	.027	.70	.475	427	Slight
Tap in Hyde Park	21.20	7.6	.008	.020	.70	.234	311	Very
Fourteenth St. Pumping Station	17.20	7.2	.003	.018	.75	.203	173	Slight
Chicago Ave. Pumping Station	22.0	6.8	.009	.018	.80	.392	517	Very
**Analyses for week ending March 24:*								
Tap in Laboratory	17.2	7.2	.006	.011	.75	.305	361	Slight
Tap in Hyde Park	16.8	8.4	.004	.010	.65	.680	4300	Slight
Fourteenth St. Pumping Station	18.4	8.0	.003	.017	.70	.709	140	Very
Lake View tap	18.4	8.6	.006	.020	.75	.407	115	Slight
Chicago Ave. Pumping Station	15.2	6.5	.005	.012	.80	.256	830	Slight
†Analyses for week ending March 31:								
Tap in Laboratory	14.8	5.6	.001	.017	.60	.332	385	Slight
Tap in Hyde Park	20.0	7.6	.003	.014	.66	.105	1310	Slight
Fourteenth St. Pumping Station	15.6	6.4	.003	.015	.60	.558	165	None
Lake View tap	20.0	7.6	.001	.012	.65	.543	210	Slight
Chicago Ave. Pumping Station	18.4	7.6	.005	.018	.55	.332	495	Slight

*Samples taken on different days.

†Samples taken on same day.

MONTH OF APRIL.

Date of collection.	SOURCE OF SAMPLES.	Total solids.	Loss on ignition.	Free ammonia.	Albuminoid ammonia.	Chlorides.	Oxygen absorbed.	Bacteria per cubic centimeter.	Turbidity.	Day of the month.	Mean wind direction.
										1	Nw.
										2	Se.
3	Laboratory tap	16.1	7.00	.004	.015	.40	.098	410	Slight	3	Sw.
3	Hyde Park...........	17.8	5.62	.001	.012	.80	.135	730	Slight	4	Sw.
3	Fourteenth street....	17.0	8.13	.004	.018	.50	.181	185	Clear	5	Nw.
3	Lake View...........	18.0	6.10	.001	.022	.65	.241	1380	Slight	6	Sw.
3	Chicago avenue......	17.5	7.50	.002	.012	.55	.241	1240	Slight	7	Ne.
										8	Se.
										9	Se.
11	Laboratory tap	16.6	7.00	.001	.010	.62	.317	625	Slight	10	Ne.
11	Hyde Park...........	16.4	7.10	.001	.018	.67	.256	450	Clear	11	Ne.
11	Fourteenth street....	16.1	.620	.001	.080	.66	.317	125	Clear	12	Ne.
11	Lake View...........	20.0	8.40	.002	.075	.70	.120	1300	Slight	13	Ne.
11	Chicago avenue......	16.4	6.80	.005	.062	.68	.332	850	Slight	14	Ne.
										15	Ne.
										16	Se.
17	Laboratory tap	16.0	6.80	.003	.010	.65	.098	430	Slight	17	E.
18	Hyde Park...........	20.2	7.80	.004	.010	.70	.067	1520	Slight	18	Se.
17	Fourteenth street....	16.4	6.80	.003	.008	.70	.010	210	Slight	19	Se.
17	Lake View...........	15.0	3.05	.004	.006	.75	.098	240	Slight	20	Sw.
17	Chicago avenue......	15.0	2.68	.004	.007	.68	.037	900	Slight	21	Sw.
										22	Ne.
										23	Ne.
24	Laboratory tap	16.5	7.75	.005	.024	.60	.067	800	Clear	24	Ne.
25	Hyde Park...........	17.5	7.75	.0016	.030	.75	.128	410	Clear	25	Ne.
24	Fourteenth street....	16.0	7.75	.003	.022	.70	.022	630	Clear	26	Se.
24	Lake View...........	16.5	7.65	.002	.020	.60	.234	920	Clear	27	S.
24	Chicago avenue......	16.7	7.80	.002	.020	.60	.249	870	Slight	28	Sw.
										29	Se.
										30	Se.

Below is a statement of the results of analyses of city water for the remaining months of 1894. The analyses shows that the character of the water is that of a usable drinking water. During the storm, on the 20th of May, the quality of the water was perceptibly changed, especially that from the Hyde Park tunnel. All the samples taken at this time were very turbid and on that account might have been regarded as seriously contaminated. The turbidity was due to suspended particles of clay and sand.

MONTH OF MAY.

Date of collection.	SOURCE OF SAMPLES.	Total solids.	Loss on ignition.	Free ammonia.	Albuminoid ammonia.	Chlorides.	Oxygen absorbed.	Bacteria per cubic centimeter.	Turbidity.	Day of the month.	Mean wind direction.*
4-31	Laboratory tap	15.75	7.75	Trace	.024	.70	.211	800	Clear	1	S.
4-31	Hyde Park...........	13.65	6.25	.001	.028	.65	.588	1100	Clear	2	Se.
4-31	Fourteenth street....	16.50	7.95	Trace	.020	.70	.211	410	Clear	3	Se.
1	Lake View...........	14.80	6.00	.004	.030	.60	.226	320	Slight	4	E.
1	Chicago avenue......	13.80	5.00	.006	.036	.65	.226	480	Slight	5	Se.
										6	Sw.
7	Laboratory tap	13.90	5.00	.014	.015	.60	.178	190	Clear	7	Sw.
7	Hyde Park...........	12.80	4.60	.006	.014	.65	.286	280	Clear	8	W.
7	Fourteenth street....	13.80	6.00	.005	.012	.60	.256	150	Clear	9	Se.
7	Lake View...........	15.00	6.00	.010	.015	.75	.427	720	Clear	10	Nw.
7	Chicago avenue......	15.60	6.00	.014	.015	.70	.286	260	Clear	11	W.
										12	Sw.
14	Laboratory tap	13.90	4.60	.006	.018	.75	.024	420	Clear	13	Se.
15	Hyde Park...........	15.20	6.20	.003	.020	.60	.012	130	Clear	14	Se.
15	Fourteenth street....	13.40	5.00	.004	.018	.60	.012	120	Clear	15	Se.
14	Lake View...........	16.70	7.30	.004	.020	.75	.014	141	Slight	16	Sw.
14	Chicago avenue......	13.30	4.70	.004	.015	.75	.024	385	Clear	17	Sw.
										18	N.
21	Laboratory tap	18.60	5.10	.016	.014	.85	.286	470	Very	19	Ne.
21	Hyde Park...........	16.90	5.90	.008	.018	.85	.241	1300	Very	20	Ne.
21	Fourteenth street....	19.40	5.80	.004	.012	.65	.196	280	Very	21	Ne.
22	Lake View...........	21.70	6.50	.006	.018	.70	.302	490	Very	22	Ne.
22	Chicago avenue......	17.90	5.10	.004	.016	.70	.211	290	Very	23	Ne.
										24	Ne.
28	Laboratory tap	15.30	5.30	.014	.014	.70	.030	550	Very	25	Nw.
28	Hyde Park...........	17.30	5.50	.016	.021	.75	.045	1450	Very	26	W.
28	Fourteenth street....	14.00	4.00	.016	.016	.70	Trace	80	Slight	27	Ne.
28	Lake View...........	19.80	5.90	.015	.018	.80	.060	900	Very	28	W.
28	Chicago avenue......	14.52	5.12	.015	.018	.70	.062	240	Very	29	Ne.
										30	Ne.
										31	Ne.

MONTH OF JUNE.

Date of collection.	SOURCE OF SAMPLES.	Total solids.	Loss on ignition.	Free ammonia.	Albuminoid ammonia.	Chlorides.	Oxygen absorbed.	Bacteria, per cubic centimeter.	Turbidity.	Day of the month.	Mean wind direction.
4	Laboratory tap	12.81	5.20	.006	.015	.60	.181	650	Clear	1	Nw.
4	Hyde Park...........	12.40	4.80	.009	.015	.70	.241	1100	Clear	2	W.
4	Fourteenth street....	14.20	6.80	.007	.015	.65	.241	95	Clear	3	W.
4	Lake View...........	14.40	4.20	.008	.020	.70	.211	185	Slight	4	Ne.
4	Chicago avenue......	13.60	6.00	.006	.018	.65	.226	850	Slight	5	Ne.
										6	Ne.
12	Laboratory tap	14.20	6.00	.008	.020	.75	.125	490	Slight	7	Nw.
12	Hyde Park...........	13.80	5.50	.009	.020	.75	.140	510	Slight	8	W.
13	Fourteenth street....	13.40	5.00	.003	.028	.80	.111	260	Clear	9	Sw.
13	Lake View...........	18.80	7.10	.009	.090	.85	.260	570	Clear	10	Se.
13	Chicago avenue......	13.80	4.80	.065	.090	.80	.254	680	Slight	11	Sw.
										12	W.
19	Laboratory tap	13.10	4.70	.080	.090	.80	.234	830	Slight	13	W.
18	Hyde Park...........	13.80	4.70	.002	.100	.85	.203	340	Clear	14	Se.
18	Fourteenth street....	14.30	6.30	.080	.110	.75	.203	270	Slight	15	W.
19	Lake View...........	17.60	6.10	.070	.100	.85	.218	1310	Slight	16	Se.
19	Chicago avenue......	13.80	5.30	0.80	.080	.75	.188	960	Slight	17	Se.
										18	Nw.
21	Laboratory tap	14.40	4.70	0.40	.016	.75	.188	910	Slight	19	Se.
..	Hyde Park...........	......	......	......	......	....	......	......	....	20	Se.
21	Fourteenth street....	13.10	4.60	.020	.018	.70	.188	180	Slight	21	Sw.
21	Lake View...........	15.50	5.60	.045	.038	.80	.173	460	Slight	22	Sw.
21	Chicago avenue......	14.00	4.80	.020	.019	.80	.173	730	Slight	23	Sw.
										24	Sw.
25	Laboratory tap	14.70	5.10	.006	.020	.80	.196	390	Clear	25	Sw.
26	Hyde Park...........	14.00	4.00	.006	.018	.80	.200	340	Clear	26	S.
26	Fourteenth street....	13.80	3.80	.004	.022	.85	.181	250	Clear	27	Se.
25	Lake View...........	15.20	6.80	.005	.016	.80	.181	670	Clear	28	Sw.
25	Chicago avenue......	13.80	5.40	.007	.018	.80	.196	590	Clear	29	W.
										30	Sw.

MONTH OF JULY.

Date of collection.	SOURCE OF SAMPLES.	Total solids.	Loss on ignition.	Free ammonia.	Albuminoid ammonia.	Chlorides.	Oxygen absorbed.	Bacteria, per cubic centimeter.	Turbidity.
3	Laboratory tap	13.00	5.00	.005	.010	.70	.143	590	Clear
5	Hyde Park...........	13.60	5.00	.005	.014	.75	.188	340	Clear
5	Fourteenth street....	13 40	5.00	.005	.010	.75	.140	480	Clear
3	Lake View...........	13.20	5.20	.005	.022	.75	.140	640	Clear
3	Chicago avenue......	14.20	5.70	.008	.020	.70	.140	330	Clear
10	Laboratory tap	13.00	4.40	.008	.010	.75	.180	360	Clear
10	Hyde Park...........	14.80	4.40	.003	.012	.75	.140	210	Clear
10	Fourteenth street....	13.30	4.20	Trace	.009	.80	.140	170	Clear
10	Lake View...........	15.00	5.00	.016	.014	.75	.190	410	T'rbid
10	Chicago avenue......	13.30	4.50	.009	.011	.75	.190	270	Clear
17	Laboratory tap	12.70	5.30	.005	.015	.70	.075	230	Clear
17	Hyde Park...........	12.70	4.70	.005	.015	.70	.075	760	Clear
17	Fourteenth street....	15.50	7.20	.005	.016	.75	.075	.260	Clear
17	Lake View...........	13.00	4.70	.007	.016	.70	.075	330	Clear
17	Chicago avenue......	13.20	4.80	.009	.022	.75	.075	210	Clear
24	Laboratory tap	12.90	3.70	.004	.020	.75	.030	410	Clear
24	Hyde Park...........	14.20	5.90	.002	.020	.70	.045	320	Clear
24	Fourteenth street....	14.10	5.80	.001	.022	.70	.045	190	Clear
24	Lake View...........	13.30	4.40	.001	.030	.70	.030	370	Clear
24	Chicago avenue......	14.20	5.70	.005	.030	.75	.045	340	Clear
30	Laboratory tap	13.30	4.40	.003	.016	.75	.060	100	Clear
30	Hyde Park...........	13.40	4.70	.003	.014	.75	.050	1100	Clear
30	Fourteenth street....	12.50	4.30	.004	.014	.70	.050	90	Clear
30	Lake View...........	23.90	9.60	.004	.022	.75	.122	560	T'rbid
30	Chicago avenue......	13.70	5.70	.004	.018	.70	.060	270	Clear
	Samples taken from the Lake, near the cribs:								Depth
14	Four-Mile crib.......	12.40	3.80	.008	.012	.75	0.75	090	10 feet
14	Four-Mile crib.......	12.40	3.80	.000	.009	.75	.090	065	20 feet
14	Four-Mile crib.......	14.00	5.70	.000	.008	.75	0.45	140	35 feet
26	Four-Mile crib.......	13.70	3.90	.006	.012	.65	.196	130	35 feet
26	Four-Mile crib.......	13.20	5.20	.002	.014	.75	.181	090	20 feet
26	Four-Mile crib.......	15.90	9.40	.002	.010	.80	.196	110	10 feet
26	Two-Mile crib	13.90	4.90	.009	.012	.75	.181	160	15 feet
26	Two-Mile crib	14.40	5.60	.005	.020	.75	.181	150	05 feet

Day of the month.	Mean wind direction.
1	Se.
2	Ne.
3	W.
4	Ne.
5	Sw.
6	Ne.
7	Nw.
8	Ne.
9	Se.
10	Sw.
11	Wsw.
12	Sw.
13	Ne.
14	Se.
15	Se.
16	Se.
17	W.
18	Sw.
19	Ne.
20	Ne.
21	Ne.
22	Se.
23	Sw.
24	Ne.
25	Se.
26	Sw.
27	Sw.
28	Ne.
29	Se.
30	Ne.
31	Ne.

The samples were collected in sterile bottles.

MONTH OF AUGUST.

Date of collection.	SOURCE OF SAMPLES.	Total solids.	Loss on ignition.	Free ammonia.	Albuminoid ammonia.	Chlorides.	Oxygen absorbed.	Bacteria, per cubic centimeter.	Turbidity.	Day of the month.	Mean wind direction.
6	Laboratory tap	14.50	5.04	.008	.024	.75	.186	1600	Turbid	1	Var.
6	Hyde Park...........	13.86	5.26	.001	.016	.75	.178	460	Clear	2	E.
6	Fourteenth street....	14.60	6.30	.001	.013	.70	.178	610	Clear	3	N.
6	Lake View...........	23.40	8.70	.005	.027	.80	.243	1200	Very	4	Var.
6	Chicago avenue......	13.18	5.00	.004	.016	.75	.180	970	Slight	5	S.
										6	S.
13	Laboratory tap	14.50	5.46	.001	.020	.70	.260	470	Clear	7	Sw.
13	Hyde Park...........	12.70	4.70	T	.010	.70	.200	230	Clear	8	Sw.
13	Fourteenth street. ..	12.60	4.20	.001	.016	.70	.200	760	Clear	9	Ne.
13	Lake View...........	13.90	4.28	.001	.016	.75	.220	1090	Clear	10	E.
13	Chicago avenue......	13.40	5.40	.002	.015	.75	.200	290	Clear	11	S.
										12	W.
20	Laboratory tap	14.30	5.10	.006	.016	.70	.380	440	Clear	13	Sw.
20	Hyde Park...........	13.30	5.60	.004	.016	.75	.400	330	Clear	14	S.
20	Fourteenth street....	13.80	5.20	.003	.014	.70	.360	210	Clear	15	Ne.
20	Lake View...........	14.10	5.50	.003	.020	.70	.340	720	Clear	16	E.
20	Chicago avenue	14.50	5.90	.006	.018	.70	.400	340	Clear	17	Sw.
										18	S.
27	Laboratory tap	12.90	4.70	.003	.020	.70	.143	610	Slight	19	E.
28	Hyde Park...........	14.30	5.78	.002	.020	.75	.143	580	Slight	20	N.
28	Fourteenth street....	13.60	4.80	.006	.018	.70	.197	160	Slight	21	Var.
27	Lake View...........	14.50	5.80	.003	.016	.70	.143	670	Slight	22	Se.
27	Chicago avenue	14.20	5.80	.003	.019	.70	.143	400	Slight	23	Se.
										24	Var.
	Samples taken from the Lake, near the cribs:									25	E.
										26	E.
									Depth	27	Sw.
8	Four-Mile crib	13.60	5.40	.004	.020	.75	.310	80	35 feet	28	W.
8	Four-Mile crib.......	16.50	7.00	.005	.015	.75	.318	90	20 feet	29	Nw.
8	Four-Mile crib	15.20	7.00	.007	.040	.80	.891	120	10 feet	30	E.
8	Two-Mile crib........	13.10	4.90	.008	.014	.85	.310	520	20 feet	31	E.
8	Two-Mile crib........	12.80	4.20	.008	.024	.65	.229	510	8 feet	....	....
8	Harbor...............	14.90	6.20	.008	.030	.80	.283	240	15 feet	....	....

MONTH OF SEPTEMBER.

Date of collection.	SOURCE OF SAMPLES.	Total solids.	Loss on ignition.	Non-volatile solids.	Free ammonia.	Albuminoid ammonia.	Nitrates.	Nitrates.	Chlorides.	Oxygen absorbed.	Bacteria, per cubic centimeter.	Day of the month.	Mean wind direction.
6	Laboratory tap	12.20	3.90	8.30	.002	.014	.024	.00	.65	.250	390	1	S.
6	Hyde Park	12.40	3.90	8.50	.002	.010	.036	.00	.75	.270	380	2	Sw.
6	Fourteenth street	12.10	3.60	8.50	.002	.018	.008	.00	.90	.270	180	3	S.
6	Lake View	12.50	4.50	8.00	.004	.014	.016	.00	.70	.290	970	4	Sw.
6	Chicago avenue	12.60	4.10	8.50	.004	.016	.012	.00	.75	.420	420	5	Se.
												6	Se.
												7	S.
												8	S.
17	Laboratory tap	12.44	4.84	7.60	.003	.015	.016	.00	.70	.840	580	9	Sw.
17	Hyde Park	12.60	3.20	9.40	.003	.016	.024	.00	.70	.810	140	10	Nw.
17	Fourteenth street	14.10	5.60	8.50	.008	.015	.028	.00	.65	.810	110	11	N.
17	Lake View	13.82	5.02	8.80	.008	.016	.024	.00	.70	.932	760	12	Se.
17	Chicago avenue	13.00	4.00	9.00	.009	.013	.041	.00	.65	.944	490	13	Sw.
												14	S.
												15	S.
												16	W.
20	Laboratory tap	13.20	5.60	7.60	.009	.013	.023	.00	.65	.844	300	17	Ne.
20	Hyde Park	12.60	4.00	8.60	.004	.013	.000	.00	.65	.837	200	18	Ne.
20	Fourteenth street	12.40	4.20	8.20	.006	.015	.000	.00	.60	.728	370	19	N.&W.
20	Lake View	12.20	5.80	6.40	.004	.012	.000	.00	.70	.644	880	20	W.
20	Chicago avenue	12.00	4.20	7.80	.006	.012	.006	.00	.65	.724	3800	21	Sw.
20	Chicago Lawn	169.40	9.80	159.60	.032	.020	.030	Trace 1	.451	.500	2710	22	Sw.
												23	Nw.
												24	Nw.
												25	Se.
27	Laboratory tap	14.60	5.80	8.80	.001	.024	.010	.00	.75	.420	390	26	S.
27	Hyde Park	11.60	4.20	7.40	.007	.036	.016	.00	.90	.580	240	27	Ssw.
27	Fourteenth street	12.20	4.20	8.00	.001	.014	.000	.00	.65	.180	170	28	S.
27	Lake View	13.20	5.20	8.00	.001	.012	.010	.00	.70	.340	1600	29	S.
27	Chicago avenue	12.90	5.10	7.80	.003	.020	.010	.00	.70	.310	410	30	W.

MONTH OF OCTOBER.

Date of collection.	SOURCE OF SAMPLES.	Total solids.	Loss on ignition.	Non-volatile solids.	Free ammonia.	Albuminoid ammonia.	Nitrates.	Chlorides.	Oxygen consumed	Bacteria, per cubic centimeter.	Turbidity.	Day of the month.	Mean wind direction.
9	Laboratory tap	14.10	4.60	9.50	.001	.016	.048	0.70	.400	460	Clear	1	Se.
5	Hyde Park	13.50	4.40	9.10	.001	.016	.032	0.70	.400	270	Clear	2	Sw.
5	Fourteenth street	14.00	5.20	8.80	.001	.022	.048	0.65	.490	130	Clear	3	Sw.
8	Lake View	13.80	4.40	9.40	.001	.020	.048	0.65	.460	910	Slight	4	W.
8	Chicago avenue	14.00	4.80	9.20	.002	.016	.032	0.70	.490	550	Slight	5	Nw.
												6	W.
												7	S.
												8	Nw.
13	Laboratory tap	13.10	3.80	9.30	Trace	.010	.050	0.65	....	240	Clear	9	Nw.
13	Hyde Park	13.20	3.60	9.60	Trace	.012	.048	0.65	....	510	Clear	10	Nw.
13	Fourteenth street	13.00	3.90	9.10	Trace	.010	.038	0.65	....	260	Clear	11	Nw.
13	Lake View	14.10	4.30	9.80	Trace	.012	.040	0.70	....	730	Clear	12	S.
13	Chicago avenue	14.30	4.20	9.10	Trace	.014	.050	0.70	....	680	Clear	13	Nw.
												14	Ne.
												15	S.
												16	W.
20	Laboratory tap	14.60	4.90	9.56	.015	.024	.040	0.80	.180	230	Slight	17	Se.
20	Hyde Park	14.40	6.20	8.20	.008	.028	.057	0.80	.180	490	Slight	18	S.
20	Fourteenth street	12.20	3.94	8.30	.002	.018	Trace	0.80	.195	170	Slight	19	Sw.
20	Lake View	14.30	5.60	8.70	.002	.040	.012	0.70	.180	820	Slight	20	Ne.
20	Chicago avenue	13.86	4.00	9.86	.008	.040	.032	0.70	.180	550	Slight	......	....
25	Laboratory tap	14.12	5.61	8.51	.001	.008	.123	0.70	.318	290	Slight	......	....
25	Hyde Park	14.00	6.00	8.00	.002	.017	.082	0.75	.270	200	Clear	......	....
25	Fourteenth street	13.00	4.80	8.20	.001	.018	.010	0.70	.230	50	Clear	......	....
25	Lake View	14.15	5.60	8.55	.002	.022	.123	0.75	.318	970	Slight	......	....
25	Chicago avenue	14.10	5.62	8.48	.006	.016	.123	0.70	.230	360	Clear	......	....

MONTH OF NOVEMBER.

No. of sample.	Date of collection.	SOURCE OF SAMPLES.	Total solids.	Loss on ignition.	Non-volatile mineral solids.	Free ammonia.	Albuminoid ammonia.	Nitrogen in nitrates.	Nitrogen in nitrites.	Chlorides.	Oxygen consumed.	Bacteria, per cubic centimeter.	Turbidity.	Day of the month.	Mean wind direction.
323	1	Laboratory tap	14.10	4.90	9.20	.001	.016	.000	.000	0.65	.032	230	Slight	1	Ne.
324	1	Hyde Park	12.74	4.86	7.88	.001	.010	.000	.000	0.70	.021	970	Clear	2	Se.
325	1	Fourteenth street	13.40	3.90	9.50	.001	.012	.000	.000	0.70	.036	140	Slight	3	Nw.
326	1	Lake View	13.90	5.16	8.74	.001	.012	.000	.000	0.70	.040	420	Slight	4	Nw.
327	1	Chicago avenue	14.70	5.10	9.60	.001	.014	.000	.000	0.70	.040	650	Slight	5	Nw.
														6	Nw.
														7	Se.
														8	Ne.
328	9	Laboratory tap	14.00	4.60	9.40	.001	.012	Trace	.000	0.70	.043	560	Slight	9	Nw.
329	9	Hyde Park	12.60	2.10	10.50	.002	.008	.000	.000	0.70	.043	830	Slight	10	Nw.
330	9	Fourteenth street	14.40	6.00	8.40	.001	.012	.000	.000	0.75	.061	210	Clear	11	Nw.
331	9	Lake View	22.10	5.90	16.20	.002	.016	Trace	.000	0.70	.035	760	Slight	12	S.
332	9	Chicago avenue	12.40	4.50	7.90	.001	.012	Trace	.000	0.70	.040	730	Slight	13	Nw.
														14	Sw.
														15	Sw.
														16	Nw.
338	16	Laboratory tap	14.90	4.92	9.98	.001	.008	.000	.000	0.70	.094	460	Slight	17	Nw.
336	16	Hyde Park	11.90	1.92	9.98	.001	.010	.000	.000	0.70	.088	1210	Slight	18	Sw.
337	16	Fourteenth street	11.40	3.90	7.50	.001	.010	.000	.000	0.70	.088	190	Slight	19	Nw.
333	15	Lake View	14.64	4.76	9.98	.002	.008	.000	.000	0.70	.032	570	Slight	20	Sw.
334	15	Chicago avenue	12.40	2.70	9.70	.002	.008	.000	.000	0.70	.032	430	Slight	21	W.
														22	Sw.
														23	Nw.
														24	Nw.
345	22	Laboratory tap	12.50	4.00	8.50	.001	.008	.000	.000	0.70	.032	620	Slight	25	Ne.
341	20	Hyde Park	11.50	3.80	7.70	.002	.008	.000	.000	0.70	.032	980	Slight	26	Sw.
342	20	Fourteenth street	11.40	3.90	7.50	.002	.009	.000	.000	0.70	.092	170	Slight	27	Nw.
343	21	Lake View	11.80	3.90	7.90	.001	.012	.000	.000	0.70	.098	450	Slight	28	Nw.
344	21	Chicago avenue	12.60	4.20	8.40	.001	.012	.000	.000	0.70	.032	870	Slight	29	Se.
														30	Ne.

MONTH OF DECEMBER.

No. of sample.	Date of collection.	SOURCE OF SAMPLES.	Total solids.	Loss on ignition.	Non-Volatile mineral solids.	Free ammonia.	Albuminoid ammonia.	Nitrogen in nitrates.	Nitrogen in nitrites.	Chlorides.	Oxygen consumed	Bacteria, per cubic centimeter.	Turbidity.	Day of the month.	Mean wind direction.
352	4	Laboratory tap	15.30	6.60	8.70	.001	.020	.004	.000	.70	.490	790	Slight	1	Ne.
353	4	Hyde Park	13.10	6.20	6.90	.004	.008	.020	.000	.75	.400	540	Slight	2	Nw.
354	4	Fourteenth street	16.56	4.46	12.10	.001	.010	.000	.000	.65	.340	210	Slight	3	W.
355	4	Lake View	13.50	4.16	9.34	.002	.010	.004	.000	.75	.260	920	Slight	4	Sw.
356	4	Chicago avenue	14.96	4.66	10.30	.004	.018	.041	.000	.75	.280	810	Slight	5	Sw.
														6	S.
														7	Sw.
														8	Sw.
288	14	Laboratory tap	12.40	4.40	8.00	.004	.016	.016	.000	.70	.210	460	Slight	9	W.
380	13	Hyde Park	15.30	4.60	10.70	.003	.012	.000	.000	.75	.320	520	Slight	10	Ne.
381	13	Fourteenth street	12.10	4.40	7.70	.001	.012	.020	.000	.70	.190	190	Slight	11	Sw.
382	13	Lake View	15.06	4.20	10.86	.002	.014	.004	.000	.70	.240	1200	Slight	12	Nw.
393	13	Chicago avenue	13.34	5.06	8.28	.001	.012	.004	.000	.70	.260	570	Slight	13	W.
														14	Sw.
														15	Sw.
														16	Sw.
														17	Nw.
														18	S.
389	21	Laboratory tap	14.02	5.06	8.96	.001	.014	.000	.000	.70	.180	680	Slight	19	Sw.
390	21	Hyde Park	14.53	5.18	9.35	.002	.020	.082	.000	.70	.180	960	Slight	20	Sw.
391	21	Fourteenth street	13.18	4.00	9.18	.001	.020	.082	.000	.70	.180	270	Very Sli't	21	Sw.
														22	Ne.
														23	S nw.
														24	S nw.
393	29	Laboratory tap	12.50	4.12	8.38	.001	.009	.000	.000	.75	.210	380	Very Sli't	25	Nw.
394	29	Hyde Park	13.90	4.80	9.10	.001	.010	.123	.000	.70	.100	1170	Slight	26	Ne.
395	29	Fourteenth street	14.00	6.00	8.00	.001	.009	.041	.000	.75	.110	210	Slight	27	Nw.
396	29	Lake View	14.12	5.98	8.14	.001	.010	.000	.000	.70	.090	1240	Very Sli't	28	Nw.
397	29	Chicago avenue	12.68	4.10	8.58	.001	.008	.041	.000	.70	.100	490	Slight	29	Sw.
														30	Nw.
														31	Sw.

A tabulation by months of the analyses and examinations made in the Laboratory during 1894—including those of air, ice, food supplies, etc.—shows the following:

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Air	4	....	....	4	....	....	....	....	....	....	....	....	8
Bacteriologic examinations	8	5	7	1	3	18	5	11	3	7	2	1	68
Bread	....	....	....	....	....	....	....	2	1	....	....	23	26
Butter	2	....	....	....	....	....	....	....	....	2	1	....	5
Candy	....	....	....	....	....	....	....	1	....	....	....	1	2
Cheese	....	1	....	....	....	....	....	2	....	2	....	....	5
Cigarettes	....	....	....	....	....	....	....	....	....	....	....	1	1
Diagnoses of diphtheria	....	....	....	....	....	....	....	....	....	29	31	35	95
Drugs	....	1	1	....	....	....	....	....	....	2	4	1	9
Ginger	....	....	....	....	....	....	....	....	....	2	....	....	2
Ice	4	....	....	....	....	....	....	....	....	2	2	....	8
Ice, pond water	....	....	....	....	....	....	....	....	....	....	....	3	3
Ice cream	....	....	....	....	....	....	....	....	....	....	1	....	1
Infernal machine	....	....	....	....	....	....	....	1	....	....	....	....	1
Ketchup	....	....	....	....	....	1	....	....	....	....	....	....	1
Milk poisons	....	1	1	....	....	....	1	2	2	....	....	....	7
Milk and cream	1219	939	1363	1336	1620	1206	959	916	765	697	499	574	12093
Meat poisons	....	1	....	....	....	....	....	....	1	....	1	....	3
Mineral deposit in water pipe	....	....	....	....	....	....	1	....	....	....	....	1	2
Wall paper	....	....	....	....	....	....	1	....	....	....	....	....	1
Water	....	1	14	35	22	21	31	26	32	21	20	10	239
Total number analyses made													12580

METHODS OF ANALYSIS.

Mr. Cass L. Kennicott, chemist and analyst to the Department, furnishes the following report and description of the methods of water and milk analysis pursued in the Laboratory:

The analysis of water, particularly the water of Lake Michigan as supplied by the pumping stations, has occupied a part of our time during 1894. After a careful consideration of the best methods in use, we have selected the following as being most rapid, accurate and best suited to the purpose. Our analyses are reported under the following heading:

DEPARTMENT OF HEALTH.

MUNICIPAL LABORATORY, CHICAGO.

WATER ANALYSIS.

No. of Samples.	Date of Collection.	Source of Samples.	Temperature.	Wind Direction.	Turbidity.	Total Solids.	Loss on Ignition.	Non-volatile Mineral Solids.	Free Ammonia.	Albuminoid Ammonia.	Nitrogen in Nitrates.	Nitrogen in Nitrites.	Chlorides.	Oxygen Consumed.	Growth in 0.2% Carbolic Bouillon.	Bactera per c. c.	REMARKS.

Collection of the Sample.—Take the sample in a clean glass-stoppered bottle holding two quarts, which has been previously entirely filled with the water and emptied before finally filling and introducing the stopper. Analyze with as little delay as possible.

Color.—To take the color look through a two-foot, clear glass tube filled with the sample and hold over a white porcelain plate.

Odor.—Half fill an eight-ounce, wide-mouthed, glass-stoppered bottle, free from odor, with the sample; warm to 80° C.; shake, and when the stopper is removed note the odor. Marked amounts of sewage in water can frequently be thus detected.

Suspended Matter.—Pass a liter of the turbid water through a dried and weighed filter. Dry the filter and deposit at 120° C., and weigh. The gain in weight of the filter times 100 gives the suspended matter in 100 000 parts of the sample. Ignite the filter and deposit in a platinum dish. The loss on ignition minus the weight of the filter is the organic suspended matter. The residue is the inorganic suspended matter.

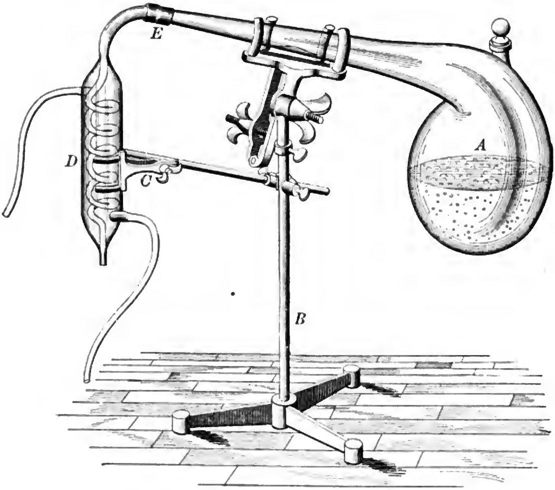
Total Solids.—Evaporate 500 c. c. of the sample to dryness in a platinum dish placed on an asbestos board over a lamp flame. Heat in the air bath at 105° C. until it ceases to lose weight, and weigh. The weight of total solids times 200 gives parts per 100 000.

Loss on Ignition.—Ignite the total solids at a low red heat. The loss in weight times 200 gives the loss on ignition in parts per 100 000. The residue left after ignition is the non-volatile mineral solids.

Chlorine.—Solutions required:

> *A.* 4.789 grams C. P. crystalized argentic nitrate dissolved in 1000 c.c. of distilled water. Each c. c. of this solution equals one milligram of chlorine.
>
> *B.* 5 grams potassium chromate dissolved in 100c. c. distilled water and a weak solution of argentic nitrate dropped in until a slight permanent red precipitate is formed.

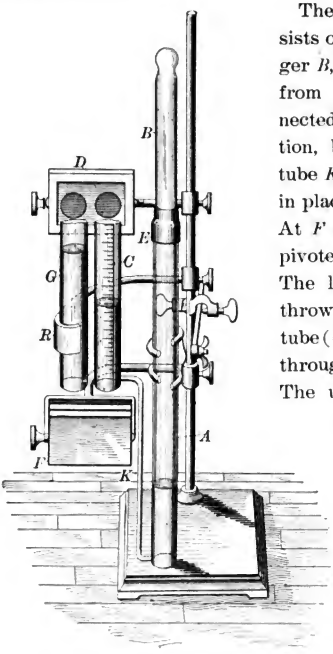
Measure into a flask or beaker 100 c. c. of the sample and add four drops of the potassium chromate solution (*B*) as indicated. Titrate with argentic nitrate solution (*A*) until a faint red color is produced which remains permanent. The number of c. c. of the solution (*A*) used gives chlorine in parts per 100 000.



AMMONIA-DETERMINATION APPARATUS.

Nitrates.—Free and albuminoid ammonia. The apparatus here shown for the distillation of water in the determination of ammonia has been in use in the Laboratory for some time and has given good satisfaction. It consists of the 32-oz. retort *A* which has been etched on the inside at the bottom with ammonium fluoride. This etching makes a great number of fine points on the glass from which a cloud of small bubbles rises during ebullition, thus preventing "bumping." The retort is clamped to the retort-stand *B* in an inclined position so that the particles thrown up by the violent boiling will flow back. The condenser *D*, which is held by a clamp *C* and connected with the retort at *E* by a rubber band, consists of a glass worm in a glass jacket. The outside measurements of the condenser jacket are seven inches in length by two and one-half inches in diameter. The great advantage of this apparatus lies in the fact that it is all clamped to one stand and takes up so little room that six retorts with their condensers only occupy a space of six by two feet. In practice a bank of from six to eight retorts and condensers is used, the water from one tap cooling three condensers. With this number one attendant can make from forty to fifty ammonia determinations in seven hours.

The colorimeter in use consists of a reservoir *A*, a plunger *B*, and a tube *C*, graduated from 5 c. c. to 100 c. c., connected as shown in the illustration, by means of the glass tube *K*. The plunger is held in place by a rubber band at *E*. At *F* and *D* are two mirrors, pivoted as shown in the cut. The lower mirror serves to throw light up through the tube (*G*) under examination and through the graduated tube *C*. The upper mirror serves to receive the reflections of the two tubes *G* and *C*. The tube *G* is held by the spring clamp *R* which is lined with felt. To use the apparatus fill the tube *G* up to the 100 c. c. mark with the dilute solution under examination and the



COLORIMETER.

tube *C* and part of the reservoir with the standard solution. Raise or lower the plunger until the colors of the liquids in the tubes reflected in the upper mirror are the same. Note the volume and make the necessary calculation.

Solutions required:

A. A 20% solution of recently ignited C. P. sodium carbonate.

B. Dissolve 200 gms. C. P. potassium hydrate and 8 gms. C. P. $K_2Mn_2O_8$ in 1200 c. c. distilled water; boil rapidly until concentrated to 1000 c. c.; cool and keep in a well stoppered bottle.

C. "Ammonia free water."—Put 500 c. c. of distilled water in the retort and add 5 c. c. of the sodium carbonate solution (*A*); distil until the distillate gives no reaction for ammonia with Nessler's solution. Now save the distillate for "ammonia free" water until about 100 c. c. remains in the retort. Do not empty the retort, but proceed with the determination of nitrates as hereafter described.

D. Nessler's Solution.—Dissolve 35 gms. of potassium iodide in 100 c. c. of water. Dissolve 17 gms. of mercuric chloride in 300 c. c. of water. The mercuric-chloride solution may be heated if it does not dissolve easily, but must be cooled before use. Set aside about 10 c. c. of the potassium-iodide solution. Add the mercuric-chloride solution to the potassium-iodide solution until a red precipitate is formed. Now add the 10 c. c. of the potassium-iodide and again add the mercuric-chloride until a slight permanent red precipitate forms. Add 200 gms. of KOH and when cool make up to 1000 c. c. with distilled water. Keep in a glass-stoppered bottle away from ammonia fumes. It is well to grease the stopper with a little vaseline to prevent its sticking.

E. Standard Ammonium Chloride.—Dissolve 15.75 gms. of C. P. ammonium chloride, dried over sulphuric acid in a dessicator, in 1000 c. c. of "ammonia free" water. For use dilute 10 c. c. of this solution to 1000 c. c. with "ammonia free" water. Each c. c. of the diluted solution will then contain .00005 gms. H_3N, or .00004117 gms. nitrogen.

Nitrates.—A copper-zinc couple is prepared by taking a clean piece of zinc foil, about two by three inches and immersing it in a 3% solution of copper sulphate when a firmly adherent coating of oxide of copper is speedily deposited upon the surface of the zinc, which must not be left in the solution until the deposit is too thick. Three or four minutes is generally sufficient. The couples must be washed and preserved in a bottle for use. Measure 100 c. c. of the sample into an eight-ounce wide-mouthed bottle, drop in a copper-zinc couple and add a pinch of salt. Allow to stand in the air bath at 80° C. for 24 hours. At the end of this time pour the water, in which the nitrogen of the nitrates has combined as ammonia, in the retort containing the residue from the making of "ammonia free" water, as described under *C* and distil 100 c. c. into a comparison tube; label and set aside.

Free Ammonia.—Clean the retort after the determination of the nitrates and measure into it 250 c. c. of the sample; add 5 c. c. of the sodium carbonate solution *A* and distil 100 c. c. into a comparison tube; label and set aside.

Albuminoid Ammonia.—To the residue left in the retort, after the distillation for free ammonia, add 25 c. c. of the alkaline permanganate solution *B* and 100 c. c. of "ammonia free" water. Let the distillation proceed rather slowly and collect 100 c. c.; label and set aside.

Calculating the Results.—The amounts of ammonia in the three distillates, *i. e.*, nitrates, free and albuminoid ammonias, must now be determined. This is accomplished by means of the ammonium-chloride solution *E*, Nessler's solution *D*, and the colorimeter.

To make the standard solution for the colorimeter, measure 10 c. c. of the ammonium-chloride solution *E* into a 250 c. c. flask and dilute nearly to the mark with "ammonia free" water; now add 5 c. c. of Nessler's solution, mix and dilute to the mark. Fill the colorimeter with this solution. To each of the three tubes containing distillates under examination add 2 c. c. of Nessler's solution. Stir with a glass rod and let stand five minutes. Now place a tube in its clamp in the colorimeter and raise or lower the plunger until the tints of yellow reflected in the upper mirror are the same. Take the reading and calculate as follows:

Nitrates.—Multiply the number of c. c. in the graduated tube, giving the same tint as the tube for nitrates, by the factor .001646. This gives the nitrogen in nitrates in parts per 100 000.

Free and Albuminoid Ammonias.—Multiply the number of c. c. in the graduated tube, giving the same tint as the tube for either free or albuminoid ammonia by the factor .0008. This gives the free or albuminoid ammonia in parts per 100 000.

Nitrites.—Solutions required:

A. Dilute sulphuric acid, 1 part of acid to 3 parts of water.

B. 5 gms. of metaphenylenediamine, and sufficient sulphuric acid to give an acid reaction in 1000 c. c. of water.

C. 2.030 gms. of pure dry silver nitrite dissolved in hot water; add pure sodium chloride as long as a precipitate forms; dilute to 1000 c. c. with water and set aside to deposit its silver chloride; 100 c. c. of the clear liquid are then diluted to 1000 c. c. 1 c. c. of this solution contains .00005 N_2O_3, or .000018424 gms. nitrogen.

The process: Put 100 c. c. of the filtered water in a comparison tube and 1 c. c. each of solutions *A* and *B*; stir with a glass rod and let stand 10 minutes. Run 5 c. c. of solution *C* into a 250 c. c. flask; fill nearly to the mark with distilled water; add 2½ c. c. each of solutions *A* and *B* and fill to the mark. Fill colorimeter tube and part of reservoir with this solution. Place tube under examination in clamp. Move plunger until the colors of the columns of liquid are the same. The number of c. c. in the colorimeter multiplied by the factor, .018424, gives nitrogen in nitrites in parts per 100 000.

Oxygen consumed.—Solutions required:

(*a*) Dissolve .325 gm. C. P. $K_2Mn_2O_8$ in 1000 c. c. of water. 1 c. c. of this solution contains .0001 gm. available oxygen.

(*b*) One part by volume of C. P. sulphuric acid, 1.84 sp.g., is mixed with three parts by volume of distilled water and a solution of potassium permanganate dropped in until the whole remains a very faint pink after standing a few hours.

The process: Measure 100 c. c. of the sample into an eight-ounce bottle, add 10 c. c. of the sulphuric-acid solution (*B*) and .25 c. c. of permanganate solution (*A*) and let stand in the bath at 80°C. for twenty-four hours. At the end of this time measure 10 c. c. of the mixture into a comparison tube and fill to the 100 c. c. mark with recently boiled distilled water. To make the standard solution for the reservoir of the colorimeter, add to 100 c. c. of boiled distilled water 10 c. c. of the sulphuric-acid solution *B* and 25 c. c. of the permanganate solution *A*; dilute 25 c. c. of the mixture to 250 c. c. with distilled water. Fill the graduated tube of the colorimeter and a part of the reservoir with this standard solution. Place the tube under examination in the clamp, move the plunger up or down until the reflection of the two columns of liquid shows the same tint. Take the reading, subtract from 100 and multiply by .025; this gives parts per 100 000 of oxygen consumed.

METHODS OF MILK ANALYSIS.

We have attempted to make the analysis of milk as simple as possible, and also to make the greater number of determinations from one portion. The literature of milk analysis is voluminous, and as many contradictions are found, it was thought best to determine for ourselves the methods best adapted to our purpose. With this end in view, many analyses by different methods, of the same sample, have been made. We make no attempt to give the many methods and figures of the analyses, but the following methods have been found to be the most rapid and accurate, and are the results of the examination of over 25,000 samples of milk and cream.

The heading of the chemist's report is as follows:

BUREAU OF MILK INSPECTION.

REPORT OF CHEMIST.

Date.	Inspector.	Laboratory No.	Specific Gravity.	Fat by Babcock.	Solids by Table.	Solids not Fat.	Fat by Extraction.	Total Solids by Evaporation.	Ash.	Analysis of Ash.	Iodine Number of Butter Fat.	Color.	Bactera per c. c.	REMARKS.

Milk is an emulsion of fat globules, casein, water and sugar. Its average composition is about as follows:

Specific gravity	1/028-1.034,	average	1.031
Cream	2%-26%		
Total solids	10.85%-16.27%,	average	12.50%
Fat	2.04%- 6.17%,	"	3.65%
Milk sugar	2.00%- 6.10%,	"	4.85%
Casein	1.98%- 6.61%,	"	3.41%
Ash	.34%- .98%,	"	.71%

The ash consists of the phosphates, sulphates and chlorides of potassium, sodium, calcium and magnesium.

The routine examination of milk samples in the laboratory consists of a determination of the specific gravity, by Quevenne's lactometer or the Westphal balance; a determination of butter fat by the Babcock test; and, from the per cent. of butter fat and the specific gravity, the solids not fat are calculated by means of the following formula:

S=Specific gravity at 15° C. F=Per cent. fat.

$$\text{Solids not fat} = \left\{ \frac{100\,S - S\,F}{100 - 1.0753\,S\,F} - 1 \right\} \times (100 - F)\,2.6$$

If the sample of milk, after these tests, does not come within the limits of normal milk, the following rules are applied:

> High fat and low specific gravity means cream added.
> High fat and high specific gravity means mineral or other adulteration.
> Low fat and low specific gravity means added water.
> Low fat and high specific gravity means skimmed.

A complete analysis is then made according to the following synopsis, the methods for which are given in detail.

Specific Gravity.—The milk should be at a temperature of 15° centigrade. The sample is mixed by pouring back and forth from the sample bottle into the hydrometer cylinder, and the gravity is taken with a Quevenne lactometer, noting the temperature, the following table for corrections being used:

Table for the Correction of the Degrees of the Quevenne Lactometer for Temperature.

(The instrument is adjusted to 15° C.)

Degrees of Instrument.	Unskimmed Milk.				Skimmed Milk.			
	Temperature.				Temperature.			
	5 C.	10 C.	20 C.	25 C.	5 C.	10 C.	20 C.	25 C.
15	–0.9	–0.6	+0.8	+1.8	....	....	....	....
20	1.1	0.7	0.9	1.9	–0.7	–0.5	+0.8	+1.7
22	1.2	0.7	1.0	2.1	0.7	0.5	0.8	1.7
24	1.2	0.7	1.0	2.1	0.9	0.6	0.8	1.7
26	1.3	0.8	1.1	2.2	1.0	0.7	0.8	1.8
28	1.4	0.9	1.2	2.4	1.0	0.7	0.9	1.9
30	1.6	1.0	1.2	2.5	1.1	0.7	0.9	1.9
32	1.7	1.0	1.3	2.7	1.1	0.7	1.0	2.1
34	1.9	1.1	1.3	2.8	1.2	0.8	1.0	2.2

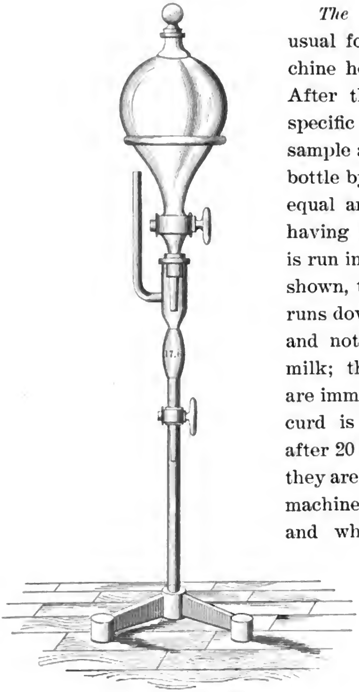


Fig. 3.

The Babcock Milk Test.—The usual form of Babcock test machine holding 20 bottles is used. After the determination of the specific gravity, 17.6 c. c. of the sample are measured into the test bottle by means of a pipette. An equal amount of sulphuric acid having a specific gravity of 1.83 is run in from the apparatus here shown, taking care that the acid runs down the sides of the bottle and not through the volume of milk; the mixed acid and milk are immediately shaken until the curd is entirely dissolved, and after 20 samples are thus treated they are placed in the centrifugal machine which is heated to 80° C. and whirled at a speed of a thousand revolutions per minute for five minutes; the bottles are then filled nearly to the top of the graduations on the neck and are again whirled for one minute and the per cent. of butter fat read.

Total Solids.—Total solids are determined by evaporation in shallow platinum dishes of about two square inches bottom area. The shallow platinum dish is weighed and left on the balance pan; 2 grams are added to the weights upon the other pan, and 2 c. c. of the well mixed milk, measured from the pipette, are delivered into the dish and the whole weighed as rapidly as possible, the movement of the rider probably sufficing. Evaporate the milk to dryness in the air bath at 105°C. to a constant weight and calculate the per cent. of total solids.

Fat.—Slip the dish containing the total solids into a Soxhlet tube connected with a tared flask and extract the fat with ether. The ether should syphon over fifteen times. Distil the ether from the flask, dry at 105°C. to constant weight, and calculate the per cent. of fat. If the addition of any foreign fat to the milk or cream is suspected, the iodine number of the fat in the flask may be taken, using solutions and following the methods given in Prescott's Organic Analysis, page 258.

Ash.—The residue in the platinum dish, after the extraction of the fat, is ignited at a low red heat and the weight taken.

In casting up the results of the milk analysis, attention should be paid to the following points :

If the gravity is high and the fat low, the milk is skimmed.

If in this same sample the solids not fat are much higher than 9 per cent, and the ash normal, the sample may contain starch or other organic material.

If, however, the increase in solids not fat is found in the ash, some mineral has been added, such as soda or salt.

If the gravity is low and the fat high, the sample has not been properly taken, or cream has been intentionally added.

If the gravity is low and the fat low, the sample is watered; but the gravity may be normal and the fat low when water has been added, if sufficient soda or starch or some such material has been put in to raise the gravity; this would be shown in the ash or solids not fat.

These methods of analysis have been used in the inspection of more than 25,000 samples of milk and cream, and where evidence of adulteration has been obtained it has always borne out the conclusions drawn from the results of the analyses.

Report of the Bureau of Sanitary Inspection.

ANDREW YOUNG, *Chief Inspector.*

Few of our citizens are aware of the scope and magnitude of this division of the Department of Health. It is conceded that the superstructure, in order to be enduring, must have the all-essential, viz., a perfect foundation. This is the care and province of this most important branch of the Department of Health, and unless our homes are constructed as regards light, ventilation, air, sewerage, etc., in accordance with well defined sanitary laws, the business, morals, prosperity and well-being of the community suffer by reason of such neglect. No greater inducement can be offered the capitalist, the man of leisure or the toiler than is offered by a city whose best energies have been, or are being used, to furnish its inhabitants healthy homes, pure air, pure water, and a well-devised sewerage system. Health is wealth. Sickness in a community breeds demoralization, vice and crime, and adds to the burdens borne by the citizen and the community at large. It is all important, then, that sanitation, like charity, should begin at home, and that, from foundation stone to roof, the structure should be under the watchful eye of the trained and competent inspector, and such inspectors should be men whose greatest recommendation for the position they fill is their practical knowledge of plumbing and drainage. These men should hold office during good behavior.

As a matter of information not generally known, Chicago's plumbing and drainage, up to 1889, was practically without inspection or supervision, the Department assuming little or no control over materials used or the manner of construction, and the inevitable result being faulty construction, the use of poor materials and defective workmanship. As a proof, witness the sanitary reports made from time to time on such buildings as the post-office, the jail, the county building, etc.

It had been a question whether the Department had the right under the law to formulate and put in operation the sanitary code. The Law Department was advised with, and after examination and their opinion, a sanitary code was adopted and put in practice. It was received with favor by the leading architects, builders and plumbers, and was reproduced by the leading technical journals devoted to sanitary work in Great Britain, China and Japan, and the German government, through their embassies, asked and received copies, while throughout the South and West our code has been taken as the groundwork of their sanitary systems.

Few, if any, changes have been made in the work. It remains practically the same as when adopted, with the exception of requiring a water test on all pipes in building and a peppermint test upon the completion of the work. So beneficial have been their operation that to-day the bath and toilet rooms of our hotels and residences are the altars of cleanliness, luxurious in their appointments, tasteful in every detail and construction. The bath and toilet room has justly taken its place as the first room in the home.

In the work of the Department, the modest cottage has the same careful supervision as the palace of the millionaire, a certificate being given the contractor upon the record of inspection.

These improvements have been effected by the officers of the Department quietly and unostentatiously. Obstacles have been surmounted, prejudices combated and a great deal of hard work voluntarily assumed to bring about this result, and in the years to come the death rate will show the wisdom of the work and the necessity for its continuance and liberal support.

Neglect of intelligent, well directed sanitary supervision by the municipality for the protection of its citizens is municipal murder. The community is by law compelled to bear whatever burden in the shape of tax is put upon it. The broad, general principle of sanitary laws in the interest of a community is that every person is entitled to protection in regard to his health as much as in regard to his property, or his liberty of action within the laws, and that on the other hand his liberty and his control of his property are only guaranteed to him on the condition that they shall be so exercised as not to interfere with the similar rights of others nor be injurious to the health of the community at large. The city, having assumed the sole right to furnish water, drainage, paving, police protection, fire protection, etc., to the citizens in return for taxes and assessments, is morally and should be legally bound to protect him in the enjoyment of his life and property, free from any nuisances created on adjoining property injurious to him.

Society as exemplified in a community is a partnership, and as the end of such a partnership is the best interest of all concerned, the conclusion is forced upon us that each member shall so act that other members may suffer no injury, either in person or property. Disregard of the laws of health arises not so much from antagonistic views in relation to proper sanitary measures as from the tendency to undervalue the homely little facts and little opportunities of everyday life. If every individual in a city appreciated the fact that he is to some extent responsible for the condition of the public health, and in order to keep his conscience clear would keep his own back yard, cellar, alley and street in good condition, the reports of the Commissioner of Health would show the result of the multiplied effort in the annual death rate. Everyone can do a little, if only to make one room more bright, more cleanly, more wholesome.

The fact is clear to us that crime is begotten by sin, and sin begotten by disease, disease begotten by filth and filth begotten by ignorance and neglect of the individual or the inefficiency of the agencies employed by the municipality to correct such conditions. The department of the city government having this in charge may be hampered by lack of necessary means, as is often the case, or its official qualification may be of the political instead of the practical kind. If such is the case, the greater need of greater interest by the citizen in his own protection against the evils of unsanitary surroundings.

The public health, the health of the community, is only the health of its individual members. The bravery of the army is but the bravery of each soldier; the sound sanitary condition of the community is only the sum of the cleanliness and vigor and salubrity of each of its constituent members. These are simple and self-evident truths, and if I dwell in this respect upon the duty of the citizen, and the aid that he can render the city's officials, it is because there have lately sprung into existence various organizations seeking a way for various reforms in municipal methods. Their aid, if wisely directed, must and will be of great benefit. Let me ask of you, worthy citizen, have you done your duty, your whole duty to yourself and your children and to your neighbor? Are the houses you rent to others, if a property owner, or is the house you live in, properly drained of its seepage? Do you know this to be so of your own knowledge? Have you taken the trouble to see with your own eyes, or the eyes of some competent and responsible inspector, that the joints are hermetically sealed; that the sewers are not deflected and cracked, or perforated by rootlets; that every outlet is securely trapped, the sewer unobstructed, flushed clean and ventilated? Is there a pool of fecal matter under your cellar floor? Does the polluted sewer air—shut off, perhaps, from your bedroom—find its way from some break, or some forgotten connection, and permeate every part of your beautiful home? If you have not this assurance, and your wife or your child dies from typhoid fever, from diphtheria, or from scarlet fever, then let your conscience say unto you as Nathan said unto David: "Thou art the man." The evil that has arisen against thee in thine own house be on thine own head. Since the Lord God formed man out of the dust of the ground, and breathed into his nostrils the breath of life, and man became a living soul, that breath of life has been to him the one essential of his being. He can wallow in filth, he can feed upon offal, go naked and hungry and drink from slimy pools, and sleep on a bed of rock or make his lair in a reeking jungle, and yet live; but deprive him of air, he dies—poison that air, he becomes diseased. Bountiful nature supplies him without cost of labor or thought with this great need of existence. A boundless ocean surrounds and permeates him. Foul it, and it purifies itself. Only when the devilish ingenuity of man thwarts nature's effort—cribs, cabins and confines it, does it retain the poison he has added.

Citizens of Chicago, have you, as citizens, done that you should have done in the past? If not, it is not too late. Individual effort, supplemented by organized effort, can accomplish the greatest results for the public good. Give us your aid to clean and keep clean every street, alley and vacant lot. Set an example on your own premises. Let us bear in mind that the future great city of this continent will be that city whose death rate year after year bears witness to its efficient sanitary administration. A city that can offer to the world the advantages of pure air, pure water, a sewerage system adapted to every want and need of its inhabitants, not only for the present, but for the future; its streets paved with a durable and sanitary paving material; its garbage and ashes removed during the midnight hours; its streets swept and cleaned before business hours; its avenues shaded by trees whose properties are health-giving—in fact, the face of nature changed to meet the wants and needs of its inhabitants—such a city would be the magnet to draw to its bosom the wealth and culture of a continent; its highways graced by institutions devoted to the arts and sciences; on its fair brow the learning of a continent should find a fitting home. Take "I will" for your motto; hold up the hands of those charged with the sanitary administration of affairs; let partisan zeal give way to the public weal, and this picture can be realized.

WORK OF THE SANITARY BUREAU FOR THE YEAR 1894.

Examinations of new buildings	12 247
Houses on complaint	11 747
Number of places of business inspected	33 298
Number of employes	373 298
Notices served	11 977
Abatements	7 764
Defective plumbing	994
Defective drainage	413
Offensive catch-basins	398
New sewers	115
Traps applied	339
Plumbing work ventilated	94
Rooms and workshops ventilated	8
Leaky roofs repaired	132
Privy vaults abolished	21
New water closets constructed	183
Yards and premises cleaned	1 527
Miscellaneous abatements	795
Plans filed and approved	9 000
Number of vault notices served	7 434
Number of permits issued to clean vaults	15 195

Plans examined and approved—arranged alphabetically:

A	486	N	227
B	357	O	304
C	670	P	446
D	307	Q	
E	453	R	260
F	753	S	934
G	254	T	403
H	548	U	103
I	103	V	137
J	162	W	800
K	124	X	
L	563	Y	11
M	570		

Making a total of 9000 plans examined and approved in this office for the year. It may be of interest to know that this would represent a total of probably 13 000 or 14 000 buildings, as plans are sometimes presented covering half a block, but are entered on our records as one plan, although comprising several buildings.

In addition to the work enumerated above, special inspections have been made from time to time, of lodging houses, factories, bakeries, etc., reports of which have been published. During the smallpox epidemic, when a large number of physicians were employed as vaccinators from house to house, examination was made of the premises in each instance, and where sanitary defects were found the same were corrected at the time, but of these no record was made—the work being so vast, embracing almost the entire city. It is believed, however, that the benefit of such house-to-house inspection is with us today, and that the thorough work done by these physicians has been of great benefit to the city from a sanitary point of view.

The 7764 abatements noted above express but faintly the amount of work involved in each abatement, as frequently one abatement covers an entire building, and in one instance during the past year covered the entire remodeling of the plumbing and sanitary work of a large hotel.

Report of the Bureau of Smoke Inspection: 1894.

F. U. ADAMS, *Chief Smoke Inspector.*

Viewed from the standpoint of the Smoke Inspector, the 1 600 000 people of Chicago are divided into two classes—First. those who create a smoke nuisance; Second, those who are compelled to tolerate a smoke nuisance. One class has radical champions who maintain that smoke is an irrepressible necessity; a concomitant of the commercial and manufacing supremacy of Chicago; that smoke not only is not unhealthy, but that it is an actual disinfectant, and that the low death rate of the city can be largely attributed to the prevalence of smoke; that the smoke ordinance and its enforcement are aimed at the interests of the Illinois coal operators; that the advocates of smoke abatement are visionary sentimentalists, and in a general way they are emphatically opposed to any agitation on the subject.

The other side has partisans no less radical, and equally emphatic in voicing the story of their wrongs. They declare that the enforcement of the smoke ordinance is a farce; they demand that soft coal be excluded from the city; they insist that its consumption entails an annual damage greater than the difference in cost between soft and hard coal; they declare that the smoke nuisance is a positive menace to the health of citizens, that it has resulted in an alarming increase in throat, lung and eye diseases; they point to ruined carpets, paintings, fabrics, the soot-besmeared facades of buildings and to a smoke-beclouded sky, and demand that the Smoke Inspector do his plain duty under the law.

It is impossible to reconcile the radical partisans of these two classes. It is fortunate that not many of our citizens are so radical on either side of this most important question. There exists a growing contingent, around which is crystalizing a sentiment that it is practical and possible to abate the smoke nuisance without endangering the stupendous interests involved. The most intelligent and active members of this contingent are drawn from the ranks of those formerly largely responsible for the smoke nuisance. They now oppose smoke for the same reason that they once defended it.

They have made the discovery that it is cheaper to abate a smoke nuisance than to maintain one.

And by reason of this discovery the smoke nuisance in Chicago will be a relic of the past before the close of the present century.

This is a mathematical and methodical age. Everything resolves itself into a question of percentages. Reforms are matters of dollars and cents. Sentiment has been subordinated and the bank account only is consulted. If it was not a matter of absolute demonstration that a smoke nuisance is maintained at a loss, if it were cheaper to make smoke than to abate it, all the laws, statutory and divine, would not abate or check the nuisance which would grow just in proportion as it netted dividends.

It is therefore a matter for congratulation that both theory and practice proclaim the economy of smoke abatement. With the speedy and inevitable acceptance of this truth will come an absolute and permanent abatement of the smoke nuisance.

It is the province of the Smoke Bureau and the ambition of the writer to formulate and execute such a policy as will make perfect combustion an applied science, with its simple principles thoroughly understood and adopted.

As the greatest manufacturing city in the United States, with every unit of its power developed from steam, Chicago is naturally confronted with the problem of smoke abatement. Within the corporate limits of the city there are located 15 000 steam boilers, of which not less than 12 000 are consumers of soft coal. These are scattered over 186 square miles of territory. No two plants are alike, and in almost every case which comes under the inspection of the Smoke Bureau there are special defects to be overcome.

Every offender imagines that there are special reasons why he should be exempt from the enforcement of the ordinance, and pleads his case with an insistance worthy of a more cleanly cause. But in spite of a hundred obstacles the crusade against smoke has gone steadily on. The Chicago of to-day has twice the steam power of the Chicago of twelve years ago, and not one-half the smoke nuisance. If it were possible to undo for a day the work which has been done along this line, to restore the boiler plants to their original primitive and smoky condition, to abolish all the smoke-preventing devices and scientific furnace construction, the sky would be so darkened as to turn day into night. Turn loose the 1000 chimneys in the half square mile which composes the business district and it would be almost impossible to exist in that territory.

The ordinary electric light plant in the country towns adjacent to Chicago make more smoke to-day with five tons of coal than do fifty down-town plants which consume 500 tons of coal daily.

Those who have not made a study of this question and who have not closely observed the gradual change for the better are unaware of the progress which has been made in the science of the perfect combustion of fuel. There are furnace plants in the heart of the city which burn fifty tons of soft coal a day, and no smoke ever comes from their chimneys. There are others which burn two tons of soft coal a day and smoke continually. When asked by the Smoke Bureau to conform to the law and abate the nuisance, they whiningly ask if the City of Chicago proposes to drive soft coal out of the market and to force manufacturers out of the city.

It is true that Chicago owes much to its proximity to the Illinois and Indiana coal fields. Cheap fuel has been a potent factor in the supremacy of Chicago as a manufacturing center. But Chicago is more than a manufacturing city. It is a natural distributing point, and by reason of its geographical position has been thrust into a commanding lead commercially. Tens of thousands of steam and sailing craft enter and leave its harbors; hundreds of thousands of freight cars make Chicago their destination. Chicago, therefore, becomes the place of residence of more than one million of people who are not directly interested in local manufacturing. Their rights are equal to those of other residents and property owners. Any nuisance which menaces real estate values, menaces the property of the community in which it exists.

Chicago has not grown great because of a smoke nuisance, but in spite of it. No city has reason to be proud of a nuisance. The time was when Pittsburgh smiled complacently when referred to as the "Smoky City." Her citizens wiped the soot from their faces and proudly pointed to Pittsburgh's great rolling mills. Her mills were great and the smoke nuisance was great; the two were one and inseparable, and the showers of soot were accepted as the inevitable accompaniment of prosperity. But natural gas was discovered and the great rolling mills substituted it for the smoky soft coal. The atmosphere cleared, and the horizon of the Pittsburgh citizen widened. The beautiful hills of Pennsylvania showed clear in the distance, and the clear rays of the sun penetrated for the first time the "Smoky City's" streets, and the citizen was no longer proud of the smoke nuisance. He protested against the title "Smoky City." He cleaned his face, repainted his buildings, put new carpets and curtains in his parlors and started in to lead a civilized life. To-day Pittsburgh is again confronted with the problem of smoke abatement. The supply of natural gas is exhausted and soft coal is again being burned. The citizens of Pittsburgh having once breathed fresh air are now fighting the smoke nuisance and are looking to Chicago for advice and co-operation.

Chicago has never lost a factory because of the enforcement of the smoke ordinance and probably never will. If it were true that smoke could be abated only by entailing an added expense for operating expenses, the rigid enforcement of the ordinance might divert some enterprises, the stockholders of which care more for a few dollars than they do for the general comfort and happiness of the community to which they are indebted for all their prosperity. But so long as the suppression of smoke results in an absolute economy in fuel, no manufacturing enterprise worthy of consideration can object to the plain provisions of the smoke ordinance.

In any consideration of the smoke problem the business section of the city is naturally entitled to precedence. Nowhere on earth is so much property massed in so small a territory. Millions and millions of dollars worth of perishable merchandise is stored away in warehouse and store. On one side of a street is a colossal establishment with two million dollars worth of delicate fabrics. On the opposite side of the street is another building, with a low, smoky chimney. The miserably constructed boiler burns, say 1000 tons of coal a year, costing $1500 and damages the property of the firm across the street $15 000. This is not a supposititious case. I know of an instance in which a restaurant firm so consumed $600 worth of coal as to cause an actual damage to adjacent property exceeding $25 000. In another instance an apartment building under the management of a receiver, protected by the court against the enforcement of the smoke ordinance, ruined the furniture and furnishings of every residence for two blocks in its neighborhood, and depreciated the value of adjacent real estate more than one-third of its former value.

The maintaining of a smoke nuisance in the down-town district is an inexcusable outrage. It is the more so from the fact that the guilty party inflicts no damage to his own property. The smoke from his stack enters the doors and windows of his neighbors, most of whom have complied with the law. Not more than one-tenth of the buildings in the business district now have smoking chimneys, and the owners of these have forfeited all claims to leniency or consideration.

The business district is unfortunately situated geographically, so far as smoke is concerned. The great manufacturing, lumber and stock yard districts lie to the west, southwest and south, in the direction of the prevailing winds. With smoke production entirely eradicated in the business center, a west or southwest wind sweeps vast clouds of smoke through the streets. A smoking chimney produces two separate and distinct nuisances. It deluges the immediately adjacent property with a shower of soot and grime. This is the cause of a direct and traceable damage. The district thus menaced has a radius of from 1000 feet to half a mile, depending on the height and capacity of the stack, and the volume of the nuisance. All down-town stacks and all apartment buildings, hotels, school houses or steam plants located in residence districts which maintain smoke nuisances, inflict actual damage on adjacent property. But every smoking chimney is a part of the cause of the general smoke nuisance. When the soot and grime and the heavier products of faulty and imperfect combustion are so deposited as to do the most damage, there yet remain in the atmosphere the finer particles, impalpable but all-pervading. These constitute the gray haze which hangs like a fog over the city, shutting out the sunlight, blurring the sky and narrowing the firmament into a cramped, grimy arch. The smoke from the stock yards, impelled by a south or southwest wind, envelops the city in its sickening embrace and penetrates the residence streets of Evanston, sixteen miles away.

If any proof were needed to demonstrate the traveling capacity of smoke, the forest fires of Wisconsin and Michigan form a case in point. The smoke from these burning forests enveloped the country from the Mississippi river to Maine, and swept over 1500 miles into the Atlantic ocean. It therefore follows that every separate smoke nuisance is to an extent responsible for the general pall of smoke which hangs over the city. The isolated factory should not be exempt, even if no indignant neighbor enters a protest.

The urgent necessity for an immediate abatement of the smoke nuisance in the down-town district has resulted in a concentration of effort in that direction to the relative neglect of other sections of the city. The few smoky plants which yet remain in that district must be forced into line and a vigorous warfare made against the belching chimneys in other parts of the city. In that campaign there is promise that the city will receive material aid if the recommendations of the Coal Dealers' Smoke Committee are carried out. This matter will be treated of later on in this report.

The Smoke Bureau has no apologies to offer for the work of the past year and the results which have been accomplished. The down-town district is more clear of smoke than at any time in twenty years. Far better results would have been attained but for exceptionally unfortunate retarding influences which may be stated as follows in the order of their importance:

(1) The protracted period of industrial and financial depression which has operated to prevent many well-intentioned property owners from putting their steam plants in proper condition.

(2) The decrease in the output of natural gas and the adoption of a policy on the part of the gas company by which it refuses to renew contracts on high-pressure plants. By reason of this over 200 steam plants have been compelled to return to soft coal. With few exceptions these plants were in no condition to make the change without making smoke.

(3) The over-crowded condition of the labor market, which has forced down the wages and the standard of engineers and firemen. A poor fireman is a most expensive form of luxury, but the average business man can not appreciate this. More than half of the smoke nuisance is directly attributable to bad stoking, and the desperate competition in the labor market has lowered the standard of stokers in hundreds of instances.

(4) The keenness of competition has forced the introduction of screenings, slack and all forms of inferior fuel into the Chicago market. Stuff which for years has been piled outside the mining shafts has been freighted to Chicago and sold to deluded manufacturers who look only at the cost price per ton of coal, regardless of its capacity to generate steam.

(5) The railroad and coal war which has cut in two the cost price of soft coal, and therefore driven large quantities of anthracite and semi-bituminous coals out of the market.

These, however, are but temporary conditions which must pass away. They have had a marked deterrent effect on smoke abatement, and the Smoke Bureau has no reason to complain at the way in which they have been surmounted.

But there are other barriers more permanent and formidable in the way of smoke reform, some of which must now be briefly considered.

It is well to be frank in the treatment of any long-standing and intrenched evil. The average owner of a steam plant is profoundly ignorant concerning the first principles of mechanics, engineering, combustion, or of anything else concerning the management or equipment of a steam plant. He admits his ignorance on these subjects. He is a good business man, prosperous and wide-awake on all subjects but this one. Some one must have charge of the plant. The business man goes into the market and buys engineers and firemen just as he would barrels of flour or bolts of cotton cloth—at the lowest market price. He does this in spite of the fact that, in no one item of expense attached to a building, is there so wide a margin between good and bad management as in the boiler and engine rooms. If he is wise or fortunate enough to secure a good engineer he will begrudge him the money to properly equip the steam plant. There are some exceptions to this rule, and they are all making money. There are thousands who are guilty of this false economy and they are making a smoke nuisance.

These business men and manufacturers not only know little or nothing concerning their boiler-rooms, but they resent what they term the interference of the city when it insists that innocent outsiders shall not be made the victims of their poor management. Not less than 75 per cent. of all the steam plants in Chicago are radically defective in some important particular. The expense of the necessary changes would be repaid in the majority of instances by the resultant saving from one year's operation under the improved conditions. In ordinary business transactions the business man considers ten per cent. a fair return for money invested. When it comes to putting in an additional boiler, enlarging or heightening a cramped stack or making some other imperative change, he calmly disregards a certain return of 100 per cent. on his investment, aside from the satisfaction that would result from the knowledge that his public spirit had made him conform to a just law, and that his share of the smoke nuisance had been abated.

An equally important factor which weighs against smoke reform is a popular belief to the effect that smoke cannot be suppressed. There exists a class which declares that where there is fire there must be smoke. This is a superstition founded on lack not only of knowledge but of observation. The hottest possible fires do not smoke. In fact, the more fire there is in an equal space the less smoke there is emitted. You can show these persons modern plants burning cheap coal without smoke and with great economy; but it proves nothing to them. They reply that soft coal always did smoke and always will. One hundred years ago they would have derided the idea of a locomotive and scoffed at the conception of an elevator. Time will eradicate this old fogy element, but in the meantime they will not remodel a steam plant unless compelled to.

There is absolutely no excuse for the woeful ignorance of some architects concerning the planning of a boiler room. After everything else has been provided for, the boilers are given the space which is left. In order to make room for a space which will rent for $500 a year, the boilers are so cramped as to render it impossible to run them within $5000 a year of the cost under proper conditions. Architects who have no knowledge on these subjects should call into consultation experts who have.

There are in the down-town district scores of buildings, costing from $100 000 to $1 000 000, in which it is impossible to properly set any known form of standard boiler. There are buildings where, by using every inch of head-room, and even by going below the sewer line, it is impossible to obtain a space exceeding 12 inches between the shell of the boiler and the grate-bars. There are plants which cost $40 000 to maintain, which, if properly designed, could be operated for $20 000 per annum. And the result of this loss to the property owner is a smoke nuisance, for which the architect is responsible. There is a practical remedy for this abuse which will be suggested.

The owner of a steam plant who is honestly desirous of abating his share of the smoke nuisance, becomes the victim of the smooth-talking representative of some company handling an alleged "smoke consumer." It is strange, but true, that the more worthless the device the more readily it can be sold. Up to the present time it has been the established policy of the Smoke Bureau not to recommend devices. In view of the fact that the endorsement or recommendation of a device would give rise to a suspicion that there was some mercenary interest involved, this policy has become almost an unwritten law. At the same time the citizen is entitled to the advice and experience of the Department, and to protection against worthless devices. On this point a practical remedy has been determined upon, and will form a part of this report.

The problem of smoke abatement is complicated by the interference of politicians and office-holders. Upon receipt of a notice from the Smoke Bureau that a nuisance exists which must be abated, the first instinct of the average property owner is to implore the aid of some friend with a "political pull." He does not think it necessary to take any step, however simple, to abate the nuisance, but concentrates all his energy in an attempt to "call off" the Smoke Inspector. The filing of a number of smoke suits is the signal for a descent upon the Smoke Bureau of a mob of petty politicians, precinct captains, influential saloonkeepers, brothers of aldermen, and occasionally a high official, with a perverted idea of his duty to the public.

Whatever of success has attended the efforts of the Smoke Bureau in the past year has been accomplished by rigidly ignoring these repeated demands for the non-enforcement of a just law. When owners of steam plants fully realize that the maintaining of a smoke nuisance entails an actual money loss, they will consult boiler makers and furnace men, rather than politicians.

More than one-half of the smoke nuisance is caused by the ignorance, stupidity and laziness of firemen. The existing ordinances of the city are defective, in that they do not make the fireman legally responsible for the results of bad stoking. When an owner has so changed his steam plant as to render it possible to burn ordinary grades of soft coal without smoke, the moral responsibility rests upon the men in direct charge of the plant. If it is possible to run a plant one day without smoke it is possible to do so for a year, barring such exceptional excuses as an accident or phenomenal weather conditions. The only thing to do with a bad fireman is to discharge him. He is a most expensive luxury.

The rigid enforcement of the smoke ordinance must tend to raise the standard and wages of competent engineers and firemen, and these men are among the most ardent advocates of such a change in the ordinances as will place the fair share of the responsibility for the smoke nuisance where it properly belongs—at the door of the stupid, lazy, careless and indifferent firemen. There are plenty of good firemen, and they can be employed if offered reasonable wages. When the standard of engineers and firemen is raised, a most important result will be obtained. There will be a decided economy in fuel consumption and a resultant abatement of the smoke nuisance. The owner of the steam plant will save money, the engineer and fireman will receive increased wages, the public will be permitted to breathe a pure atmosphere, and the western coal operator will have protected his trade against the competition of anthracite and other forms of smokeless fuel.

The history of smoke abatement for the year 1894 is relieved by two events of marked importance. The active crusade against the smoke nuisance has clearly demonstrated the necessity for a thorough revision of the existing ordinances, an enlargement of the Smoke Bureau and an increase in the powers of the municipal authorities charged with the abatement of the smoke nuisance. The Corporation Counsel is now drafting an ordinance, which if passed and intelligently enforced will result in the speedy abatement of this evil without working the slightest injustice to any interest involved. Hardly second in importance is the enlistment of the western coal operators in the crusade against smoke since the close of the year. They now promise hearty co-operation with the Health Department in this work. A brief account of the developments which have led to these progressive steps may prove of interest.

Upon my appointment as Chief Smoke Inspector, I found that there was an overwhelming public sentiment in favor of a suppression of the smoke nuisance. Opposed to this public sentiment was but one interest powerful enough to menace the success of a vigorously conducted campaign. That interest was the bituminous coal trade. Whatever of disorganization existed among the soft coal operators did not extend to their hostility against the Smoke Inspector. Against the Smoke Bureau their hostility was unanimous, aggressive and organized. It was an inherited antipathy, and grew just in proportion as the Department was successful in suppressing smoke.

The reason was plain. The policy of the Smoke Bureau, its organization, and its defined powers under the ordinance, all tended to render smoke abatement impossible, except by an inevitable discrimination against the naturally smoky coal mined in Illinois and other bituminous fields adjacent to the Chicago market. The remedy was a simple one, and the movement for a reorganization has so far progressed as to render it possible to outline the policy of the future. That remedy is to reorganize the Smoke Bureau so as to secure the voluntary co-operation of the one menaced interest—that of the soft coal operators.

A few weeks' experience with the actual workings of the Smoke Bureau convinced me that only superficial results could be obtained with the machinery as organized. Six inspectors, with which to cover 186 square miles of territory and to watch 8,000 chimneys; not a dollar of money with which to conduct a test or experiment, however simple or inexpensive; no co-operation with other bureaus naturally allied with the one under my charge ; access to the books and records of the Boiler Inspector denied after repeated requests ; no corrective restraint over criminally careless and ignorant engineers and firemen ; no authority to summarily suppress a nuisance, no matter how flagrant and inexcusable ; no method by which anxious and willing owners of steam plants could be given the benefit, the disinterested advice and recommendations of some impartial authority, based on intimate knowledge of the latest and best applications of the principles of perfect fuel combustion ; no power even to prevent the construction and installation of new smoke nuisances, designed by unskilled architects at the demands of deluded owners—such were a few of the conditions which prevailed, and which still exist, and must be changed before permanent reform can be hoped for.

There is now being drafted by the Corporation Council, who is aided by the disinterested advice of a committee of skilled engineers and experts appointed at the request of the Health Department by the Coal Operators' Smoke Committee, an ordinance which provides for a consolidation of the Smoke Bureau, the Bureau of Boiler Inspection and the Board of Examining Engineers, and for the creation of a municipal department which might be designated as the Department of Smoke and Power Inspection. The department should have as its head a Supervising Engineer, who, with a Smoke Inspector and a Boiler Inspector would constitute a Board of Examining Engineers—this board to be delegated with powers which may be enumerated as follows:

1. To examine engineers, firemen and boiler tenders and to issue licenses to those who pass a rigid examination.

2. To revoke or suspend any license thus issued upon satisfactory proof that a steam plant has been so handled as to endanger the lives, health or comfort of occupants of the building, or of the public.

3. To inspect, revise and, when satisfactory, approve of the steam plant plans of all buildings for which a building permit is required; said approval to be made before any building permit can issue.

4. To condemn and to order the suppression, upon proper proof, of any steam plant which is so constructed as to be a menace to the lives, health or comfort of the occupants of the building in which it is located, or to the public.

5. To so organize the Department of Steam and Power Inspection as to provide for a proper supervision over all steam plants and over all the machinery and appliances which are placed in charge of engineers and firemen. This will include an inspection of elevators, steam-pipe fittings and connections and such other divisions as come under the general head of steam plants.

6. In all cases where steam plants are constructed in violation of well-known and accepted principles, by reason of which perfect fuel combustion is impossible, the Board to have power to order the immediate making of the necessary changes. On the failure of the owner to conform to this order, after the expiration of a reasonable time, the Board to condemn and order the suppression of the steam plant as a nuisance.

The city has as much right to insist that steam plants be properly equipped and constructed as that fire-escapes shall be placed on buildings; that proper exits from buildings shall be provided; or that no one shall so use his property as to damage that of his neighbor. When it is considered that the enforcement of such an ordinance will result in an actual saving to every faultily-constructed plant, the manifest justice of such an enactment is apparent.

So far as the general work of the Smoke Bureau for 1894 is concerned, I am frank to say that the results obtained are far from satisfactory. In the down-town district a decided improvement has been made, but in the great manufacturing districts to the north, west and southwest hundreds of chimneys yet belch forth clouds of filthy smoke.

The railroad companies have made a faithful and successful attempt to control the smoke from their locomotives and find that it is good economy as well as good policy to refrain from smoke making. Many of the roads regularly employ inspectors who keep watch over their firemen, and on other roads the engineer and fireman of any offending locomotive are subject to suspension or dismissal upon receipt of a smoke notice from this Department.

A determined effort has been made to solve the tug-boat smoke nuisance, which is of the most offensive form and the hardest to overcome. The steam tug Black Ball No. 2, of the Vessel Owners' Towing Company, was equipped for the burning of oil and a series of experiments made. Though these experiments were successful, both from a smoke standpoint and from the steam-generating capacity of fuel oil, the owners of the tugs are so prejudiced against this form of fuel that its adoption is only a remote possibility. The most effective solution of the tug-boat smoke nuisance would be to take every tug in the Chicago river, with a single exception, out into the lake and sink them. Having done this, new boats should be built on modern principles of marine construction.

There is now under way a series of experiments with various kinds of soft coal, under the supervision of a committee composed as follows: Gen. Fitz Simons, of the Fitz-Simons & Connell Company; J. S. Dunham, president of the Dunham Towing & Wrecking Company; Capt. Wm. Harmon, of the Chicago Towing Company; O. S. Richardson, of the O. S. Richardson Fueling Company, and F. U. Adams, Chief Smoke Inspector. The tugmen have pledged themselves to adopt any recommendations made by this committee.

The rapid increase in apartment houses and family hotels located in the best residence districts of the city, has given rise to a new and offensive form of smoke nuisance. With few exceptions these new buildings are miserably equipped so far as their steam plants are concerned, and are among the most persistent offenders with whom the Smoke Bureau has to contend. In many instances no permanent reform can be obtained without a complete overhauling and reconstruction of the steam plants. Short-sighted indeed are hotel managers and apartment-building owners who imagine that a section of a city becomes desirable as a place of residence from a multiplicity of smoke nuisances.

The past year has been marked by wonderful activity in the designing and invention of smoke-preventing devices. Many of the new constructions now in the market possess decided merit, but this report will not enter into any discussion on this subject, or any consideration of the advantages claimed for these various improvements. It is sufficient to state that there are a number of first-class smoke-preventing devices, which may be purchased and applied at small expense, some one of which will not only abate any nuisance, but will accomplish a decided economy in fuel.

In selecting a smoke-preventer the conditions of the plant to be equipped must be carefully considered. A certain device may do excellent work under certain conditions, and be worthless under others. Any capable engineer can solve the problem after an examination of the various types, as applied to steam plants in actual operation in Chicago. The report of the Coal Operators' Smoke Committee should prove of great value on this point.

It is difficult to indicate by statistics, however carefully gathered, the extent of the work done by the Smoke Bureau in a year. From the records of 1893–94 the following data are selected, as possessing public interest:

Number of observations and inspections of steam plants made	5617
Number of separate plants inspected	1644
Number of steam plants fitted with some form of smoke-preventing device	1121
Number of plants with no smoke-preventing device	523
Number of steam jet devices in use on plants inspected	642
Number of abatements recorded	976

This latter item does not include the abatement of smoke from hundreds of locomotives, which have been rendered smokeless by the adoption of coke and other smokeless fuel, and also by the application of smoke-preventing devices.

Many citizens have reconstructed their plants without waiting for an official notification from the Bureau. In addition to the regular work of inspection, thousands of complaints have been given prompt attention. In most instances reforms have been accomplished by the making of some slight alteration or improvement.

In the down-town district I have attempted to make a personal examination of every plant, but as yet have not completed the canvass. Almost without exception the owners of down-town property have evinced an earnest desire to co-operate with the Bureau in its work. As a result of the systematic attempt to stop smoke in the business district, there is a radical improvement, so noticeable as to attract the favorable attention and comment not only of citizens, but of visitors from neighboring cities.

NOTE.—Since the close of the year, and while my report was as yet unfinished, an invitation was extended by Health Commissioner Reynolds, in response to which 175 gentlemen, directly representing the coal output of Illinois, Indiana, Ohio, West Virginia and Pennsylvania, met in the Council Chamber of the City Hall, for the purpose of formulating some plan by which the smoke nuisance could be suppressed and their trade at the same time protected. In calling the Conference to order Dr. Reynolds said:

"GENTLEMEN:—Before turning this Conference over to you for organization, I wish to say a word or two as to the motives which led me to invite your presence and the object which I hope may be accomplished. The duty of suppressing the so-called 'smoke nuisance,' is devolved by the Municipal Code upon the Commissioner of Health and the Superintendent of Police, and so far as the present incumbents have the power and authority it has been attempted to discharge this duty with due regard to the interests of all parties.

"The developments of the past few years seem to indicate that our low-priced soft coal may be used without any offensive production of smoke. I think it has been demonstrated that these coals may be burned with little or no smoke at all if carefully and intelligently fired, in a properly constructed furnace, with sufficient grate surface and chimney area, to secure the necessary supply of oxygen for perfect combustion. I have also seen devices for which various claims are made as to the economy of consumption and more or less complete prevention of smoke.

"It has seemed to me that the soft coal operators, being directly and pecuniarily interested in removing the widespread objection to the use of this fuel, must have acquired valuable practical experience in their study of the question, and this experience would be of great value if it could be collated, tested and sifted and the results formulated for practical use.

"Among the subjects upon which your counsel and advice should be valuable, it occurs to me to mention the existing ordinances, rules and regulations with regard to building and construction, to boiler inspection and to the licensing of engineers, etc. What modifications, amendments or extensions are desirable? Should power plants be brought under the inspection of the Department and what are the practical requirements of furnace construction, grate surface, chimney area, etc., per proposed horse power, in order to secure the perfect combustion of soft coal as fuel? Should firemen be made subject to examination and license?

"There are, no doubt, many other points which will suggest themselves to you in which the action of this Conference will aid the Commissioner in the intelligent, considerate and equitable discharge of his duty in this connection.

"I hope that this Conference will organize for permanent and continuous action, and not cease its efforts until the vexed question of the 'smoke nuisance' is settled for the best interests of all concerned."

Mr. A. L. Sweet, of the Wilmington Coal Company, was appointed chairman, and Mr. C. L. Deering (President of the Coal Trade Association), Secretary of the Conference, which was then addressed by the Chief Smoke Inspector, who began by saying that it was impossible to consider the smoke abatement problem without discussing the merits and demerits of various fuels and a consideration of the numerous mechanical devices for controlling smoke; and continued:

"This Conference has been called with the hope that, after due deliberation, some comprehensive plan may be outlined and dignified by the endorsement of you gentlemen who so largely represent the coal interests of the Western States. I do not understand it to be the desire of the present administration, or of any of its officials, to take any action which might tend to discriminate in favor of Illinois coal as against the coals from any other State. The object of this Conference is to protect the interests of the western coal miners and operators, and to secure for them that which they are justly entitled to, and at the same time to leave the way clear for a rigid enforcement of the smoke ordinance of the City of Chicago. It is generally admitted and conceded that the recent agitation of the smoke question has decreased the consumption of Illinois coal in Chicago and has resulted in a corresponding increase in the various forms of smokeless fuel, such as anthracite coal, gas, coke, oil and the high-priced eastern coals which are designated as smokeless. For this result the Smoke Bureau has no apology to offer nor excuses to make. There are but two ways to abate a smoke nuisance, namely—first, the substitution of some form of smokeless fuel for bituminous coal when burned in the ordinary type of furnace; second, the general adoption of effective smoke-preventing devices on all plants burning ordinary grades of soft coal. When a consumer of soft coal refuses for any reason whatever to equip his plant so as to decrease materially if not to abate the smoke, the enforcement of the smoke ordinance must tend inevitably toward the substitution of non-smoke-making fuel. The administration is committed to the abatement of the smoke nuisance, and back of that policy lies the overwhelming sentiment of a vast majority of the citizens, demanding that the crusade against smoke be not checked but rather that it be pushed in the future even more vigorously than it has in the past. It remains for you, gentlemen, representing the western coal interests, to say whether you will lend your earnest co-operation to the city in its efforts to abate the smoke nuisance and thereby protect your trade, or whether you will, by active or silent opposition, see that trade yet further diminished."

The speaker then discussed at considerable length the advance made by science in fuel combustion. He referred to the enormous waste of coal, and declared that wasted coal meant smoke. He warned the operators that it would not do for them to fall back on the statement that Chicago's supremacy had been attained by reason of the proximity to the Illinois coal beds; on the contrary, the prosperity of these coal fields was due to Chicago. He declared that the statement that there were no smoke-preventers or consumers was untrue and added that if the devices now used in 1600 furnaces were removed it would be impossible to see 150 feet away. There were hundreds of plants burning soft coal in Chicago which produced no smoke. If 500 could thus be operated so could 5000. Some operators declare the smoke question to be a purely sentimental one. There was nothing "sentimental" about the $150 000 annual loss to Marshall Field & Co., by reason of smoke-spoiled goods. The added laundry bills of Chicagoans were not "sentimental."

After treating the subject of smoke-preventing devices and appliances the speaker concluded as follows:

"The average Chicago business man and manufacturer is earnestly anxious to abate the smoke nuisance. The coal operators and dealers of Chicago, whose interest are directly involved in this matter, have it within their power to take up this question and make any recommendations that they desire. I therefore respectfully submit for your consideration the following outline of a plan by which the coal interests of Chicago may co-operate with the Department of Health and the Smoke Bureau in efforts to abate the smoke nuisance:

"This Convention should appoint a permanent committee and empower it to make a thorough investigation of smoke-preventing appliances and draft a report embodying certain suggestions and recommendations. After having made a careful examination of the various devices they should select the best and most economical appliances and urge their adoption. It should insist that the company handling any device thus endorsed by the committee should make a contract with any owner of a steam plant desiring to purchase the same, so worded as to absolutely guarantee the abatement of the smoke nuisance. No device should be put in except at the risk of the parties manufacturing it. In the event that the device fails to stand a practical test, it should be removed at the expense of the company manufacturing it. The committee should also secure the co-operation of architects.

"Fortified by the recommendation of such a committee, the Smoke Bureau would have no hesitancy in carrying out its policy. When an observation is taken of a smoking chimney, the matter would be referred to the committee and by them to the dealer who is furnishing the coal to the plant in question. It would then become the duty of this dealer to go to the customer who is violating the ordinance and urge him to follow the recommendations made by the committee. In the event that the violator declines to take any such action he should be left to the tender mercies of the Smoke Bureau, which would not hesitate to enforce the ordinance to the fullest extent of the law. It would also be the province of the committee to test such new devices as from time to time will come into the market.

"The Smoke Inspector is instructed by His Honor, the Mayor, to insist upon the absolute abatement of the smoke nuisance in the district bounded by Twelfth street, the lake, the south branch and the river. In order to execute this policy the Smoke Bureau will insist upon the fullest latitude on all questions which may arise concerning smoking steam plants in that section. The Department will insist on one of two things, either the reconstruction of the plant or the adoption of an absolutely smokeless fuel."

A general discussion followed, participated in by Mr. G. E. Smith, superintendent of motive power for P. D. Armour and Company; Mr. N. S. Patten, architect; Mr. T. W. Harvey, manufacturer; Mr. W. P. Rend, coal operator; Mr. Walter Bogle, coal dealer; Mr. Paul Morton, of the Santa Fe, and Mr. C. M. Higginson, of the Chicago, Burlington and Quincy railway companies; Messrs. C. B. Niblock, F. S. Peabody, and others, at the conclusion of which a committee was appointed and empowered to investigate the devices for smoke consumption, naming those it approves and formulating rules for the construction of boiler plants to be built and the method of improving those already built, and to make such other suggestions as may be of service. The resolution provided that the committee should consist of eleven members, to be divided as follows: One architect, one engineer, one consumer of coal, one city authority, seven sellers of coal—one each for West Virginia, Pennsylvania and Ohio, and two each for Indiana and Illinois. The appointments made by Chairman Sweet were as follows: Architect, William Holabird, of Holabird & Roche; engineer, J. E. Smith, of P. D. Armour & Company; consumer, Charles F. Elmes, of the Charles F. Elmes engine works; city authority, R. W. Francis, engineer and mechanical expert; sellers of coal—for Ohio, Harry N. Taylor, of the Sunday Creek Coal

Company; for Pennsylvania, Col. W. P. Rend; for West Virginia, Francis S. Peabody, of the Peabody Coal Company: for Indiana, Charles B. Niblock, of the Brazil Block Coal Company, and John K. Seifert, of the New Pittsburg Coal and Coke Company; for Illinois, Glenn W. Traer, of the Whitebreast Fuel Company, and W. L. Schmick, of the Consolidated Coal Company.

This committee is now organized, and is making a thorough investigation of all the smoke-consuming devices in the city. It will select and recommend the general adoption of those devices which show the most favorable results in the tests. The committee will first decide which devices are capable of suppressing smoke. They will then make evaporative tests, and list them in the order of their apparent economy.

The committee thus formed is designed as a permanent one, and will be in a position to investigate and pass upon at any time, such new devices as give promise of merit. It may also withdraw from its list of approved devices such ones as fail to merit the preference given them.

The report of this committee should prove of great value to the Smoke Bureau. The high standing of the experts who constitute the committee on devices—Messrs. Smith, Francis, Elmes, Traer, Holabird and Seifert—will invest their recommendation with an authority which the Department will be glad to recognize.

I am in receipt of scores of letters from the officials of the principal cities of the United States, requesting that they be thoroughly advised concerning the work of this, the Coal Operators' Smoke Committee. With the reorganization of the Smoke Bureau, and the proposed enlargement of its scope and powers, and aided by the co-operation of the coal operators, smoke abatement will become possible in the near future.—*F. U. A.*

Statistics of Employments in Trades in 1894.

JOSEPH GRUENHUT. *Statistician.*

Our present economic system draws capital and labor in growing amounts and increasing numbers to a favorable business location like Chicago, the rate of continued growth depending on the chances of employment for new-comers. The floating population rapidly diminishes with the loss of employment; but the invested fixed capital can not be moved and its owners must stand the loss for lack of orders. Capitalists often lose by new improvements, which depreciate costly machinery; also by the fall of prices through changes in fashion and great fluctuations in supply and demand. Business depression inflicts heavy losses on capitalists, who often must keep at work even at a loss, because the interruption would be still worse and, may be, impracticable except in a comparatively small number of establishments.

The Signal Bureau reports the changes in the weather and has proven its usefulness to mankind. There should be concerted action among civilized nations to gather economic information and transmit the same for general use, so as to anticipate the coming of expansion and contraction of trade.

Statesmen are considering carefully what measures should be passed to regulate the social relations developing between the corporate employers and their wage-working armies of employes as to rates of pay, hours of work and other conditions of economic activities. Chicago has been the storm center of contest between combined capital and a determined trade organization in the great strike of the Pullman car works, which involved the American Railway Union and the railroads centering in Chicago. This labor trouble required authoritative interference and may be taken as the beginning of the end of the let-alone policy of economic development as manifested by trade-unionism on one side and unified corporate combination on the other.

There are three hundred large firms in manufacturing, wholesale trade and transportation, who employed before the business depression a full force of 100 000 persons. This working force was reduced to 65 000 during the dullest season, but it gradually increased until, in October, 1894, the actual number employed by those firms had reached about 86 000. Each of these firms employs over one hundred persons and up to six thousand, who are paid in the Chicago offices.

There are about 350 firms each employing from 50 to 100 persons; 450 firms each employing between 25 and 50 persons; 800 firms each employing between 10 and 25 persons, and several thousand firms each employ from 5 to 10 persons, leaving about 16 000 firms employing under five persons each.

Among the trades which suffered most during the business depression, were building materials, stone and brickyards, iron-works, machinery, furniture and wearing apparel; building activities also fell off, so that a large proportion of the surplus floating population left the city, leaving thousands of dwellings and apartments vacant, especially in the districts with numerous boarding-houses and furnished rooms.

The School Census taken in April, 1894, showed a surplus of 39 000 males over females, while, during the World's Fair year, it had reached 100 000, exclusive of visitors.

Manufacturing establishments of large dimensions are not running with full force during the whole year, and the percentage of persons employed varies indefinitely. Large numbers of persons work only eight or ten months during the year, and the problem of the unemployed is arousing public interest in connection with the proposed short work-day for equalizing labor and leisure among the largest number of factory hands. In most manufacturing industries steam power and machinery make the human labor more effective, thus lessening the first cost of the unit of production.

Some trades work by seasons—for instance, navigation, building and certain articles of changing fashion, so that the continuity of work is broken by compulsory idleness during many months. But the investment of great amounts of capital in machinery reduces the expense account for labor and vastly increases the quantity of products, so that overproduction occurs and factories shut down or greatly reduce their working forces.

The Official Census—an abstract of which is appended to this report—taken in April, 1894, shows the numerical strength of the various nationalities in Chicago. The immigrants and their children belong to the working classes and the lower middle-class shopkeepers; in their home countries pronounced class feelings prevail, and protective measures are considered necessary for the social and economic safety of the working people against powerful employers.

Present economic abuses have been excused on the pleas of freedom of contract, personal liberty, individual enterprise, parental authority and vested rights or natural selection. But the desperate outbursts of violent strikes among the working people and the political self-assertion of labor organizations, are premonitions of legal and social interference with the present established order of business arrangements and the distribution of incomes and public burdens, and the leaders of public opinion must aid in a rational solution of these complicated difficulties.

The problem of saving small retail dealers from the overwhelming competition of mammoth department stores is pressing, and municipalities must solve it, so as to preserve the fair-dealing neighborhood trade from alleged fraudulent competition. Local authorities are in duty bound to regulate the private monopolies of supplying gas and electric light, telephone service, street railways and other virtually exclusive ownerships, and thereby utilize social opportunities for the common weal.

The present influence of machinery tends to break the continuity of employment, except where the demand for the commodities produced is regular or where the supply is regulated by the preconcerted action of those who control production; it also increases the quantity of employment given to women and children as compared with that given to men.

An indirect result of greater production due to the application of machinery has been the increased number of persons employed in the distributive industries and in transportation. With the increased and improved productivity of factory work the numerical proportion of factory hands is getting less as compared with the number of those who handle the commodities for distribution among the consumers.

The storekeeper is the retailer of the manufacturer —hand-made goods for custom trade are the exception. There are about 5000 tailors, milliners, shoemakers and dressmakers for exclusive custom work; but in most productive industries ready-made goods are the almost total supply for consumption.

This condition of production eliminates the mechanics and artisans from independent self-employment except as retail dealers for the neighborhood trade. The present generation has witnessed the phenomenal growth of this economic transformation, which shows a rapid increase of wage-workers with a decreasing number of employing firms.

During the first few days of October a census of factories was taken, which showed that, on the whole, the manufacturing establishments were working with full force, considering the contraction of business.

The present generation has witnessed the growth of the factory system, which got a start during the war of the rebellion, and increased with new inventions and continued concentration of men and means in great industrial establishments. Factory workers are a different class of wage-earners as related to employers; they are distinct from artisans who may employ themselves, owning the tools and materials of custom-made goods for the neighborhood trade. A factory works for a large market, and when it shuts down, most of its mechanics are not fit to do the work of skilled artisans, and usually remain unemployed until the factory starts again.

In 1893 and 1894 there were great variations in the numbers employed by manufacturing firms, a large proportion of the factory hands being idle for many months during the business depression.

There are over 5000 factories and large workshops here, but 200 of the largest establishments employ more persons than the other 4800 firms.

In certain industries Chicago is a leading center for the trade of the world, as for instance packing, canning and dressed meat. Gas works, telephone and telegraph, street railway and steam railroad services are furnished by great corporations, employing numerous armies of wageworkers. Certain products for universal consumption are controlled by trusts and combinations, whereby the number of competing firms has been reduced and is still getting less. The legal regulation of such business organizations is one of the hardest problems of our transition from the individualistic form of productive and commercial activity to the unification of management of immense investments of capital in leading industries.

The latest improvements in building appear in the rise of "skyscrapers" for offices, light manufacturing, wholesale show rooms for goods, and for hotels and apartment houses, whereby the values of ground rents are enhanced and the concentration of business facilitated in a high degree. Some office buildings contain 1000 to 1500 persons, employed on the premises during business hours. Branch offices of firms from great distances and many States are located on the numerous floors of such fireproof buildings.

The number of persons employed in large manufacturing blocks exceeds the number of inhabitants of good-sized country towns. There are over 2000 miles of railroad tracks within the city limits, so that factories can be placed conveniently near to the main and side tracks of the trunk roads. The transportation facilities by rail and lake make Chicago a reservoir of goods for general distribution in all directions, and new establishments are started to utilize the favorable location of this city.

The high buildings, mostly in the business center north of Twelfth street, east of the river, number as follows:

6 stories, 175; 7 stories, 80; 8 stories, 44;
9 stories, 10; 10 stories, 13; 11 stories, 1;
12 stories, 12; 13 stories, 3; 14 stories, 10;
15 stories, 2; 16 stories, 8; 19 stories, 1;
21 stories, 1. Total, 360.

Extensive rows of business blocks in central locations are occupied by 4 or 5 story structures, which will be enlarged by additional stories within a few years. Manufacturers using steam and electricity have been moving into high structures expressly built to accommodate numerous workshops. This appears in the mammoth blocks for the printing trades and for machine shops, metal works and fine woodwork. Millions of dollars will be permanently invested in erecting additional stories to long rows of buildings in business centers; corporations and syndicates are likely to undertake such enlargement of the present modest size of structures for offices and workshops and warerooms.

The increase of population and the continuous concentration of business cause the rise of "skyscrapers," and some tax-reformers favor an extra taxation of such enhanced land values for such municipal purposes as schools, police, etc. The market value of real estate is a social creation altogether, and some political economists insist upon the duty of the government to collect some proportion of the increment of ground rent for the public treasury.

TABULAR STATEMENT OF INDUSTRIES.

FOOD AND DRINK.	FIRMS.	EMPLOYES.
Bakeries	50	2 150
Confectioneries	44	2 350
Butterine	9	300
Flour	50	450
Glucose	1	650
Syrup	16	140
Vinegar	12	275
Yeast	11	300
Flavoring extracts, etc	20	450
Fruits and nuts	70	475
Pickles and preserves	38	575
Fish and oysters	52	375
Packing and slaughtering	51	20 200
Meat	42	350
Soap and candles	45	1 350
Seeds	11	450
Florists and nurseries	200	650
Salt	11	125
Ice	53	1 125
Coffee, tea and spices	32	675
Groceries	38	3 310
Commission	800	4 900
Malt and hops	21	475
Brewers	67	2 650
Bottlers	131	590
Wines and liquors	172	550
Distillers and rectifiers	30	250
Hotels and grand restaurants	400	6 600
Baking powders	22	550
Starch	7	50
Total	2 506	53 240

MEDICINES AND TOBACCO.	FIRMS.	EMPLOYES.
Drugs, wholesale and manufacturing	14	550
Tobacco, manufacturing and wholesale	52	910
Cigars, manufacturing and wholesale	500	2 500
Patent medicines	140	450
Total	706	4 410

LEATHER AND GOODS.		
Leather and leather goods	32	350
Leather and findings	32	200
Tanners and curriers	19	2 200
Hides, wool and tallow	38	450
Harness, collars, etc	15	325
Glue and fertilizers	25	650
Axle grease	8	50
Boots and shoes	89	3 500
Belting	18	150
Rubber goods	58	400
Total	334	8 275

WOODEN MATERIALS AND WORKS.		
Lumber yards and dealers	250	5 150
Planing mills, box factories and sash	145	4 850
Willow and woodenware	16	950
Billiard tables and saloon fixtures	8	550
Bridge and car builders	48	6 550
Brooms and broom corn	44	250
Burial cases and coffins	8	450
Carriages and wagons	281	1 725
Cigar boxes	9	320
Coopers	51	1 125
Corks, bungs and faucets	6	210
Elevators and hoisting machines	16	850
Furniture and fixtures	220	12 500
Picture frames and moldings	90	1 650
Pumps	16	250
Toys and fancy goods	20	210
Trunks	28	350
Turning and carving	40	275
Lasts	2	88
Upholsterers' supplies	31	150
Boats	4	25
Bellows	2	22
Total	1 335	38 500

Iron and Steel.

	FIRMS.	EMPLOYES.
Bicycles	95	1 850
Boilers and supplies	56	750
Cornices	98	525
Files and saws	22	175
Fire apparatus and escapes	15	275
Foundries	70	3 000
Hardware and cutlery	84	3 850
Horse nails	5	350
Heating apparatus	62	825
Lightning rods	3	75
Machinery and tools	164	5 500
Scales	13	310
Safes	17	125
Tinware	18	925
Wire goods and wire	43	510
Iron and steel rails	8	3 800
Iron works	113	3 350
Stoves and furnaces	115	2 100
Patterns and models	39	175
Sewing machines	99	510
Junk	108	450
Railroad supplies	150	390
Total	1 397	29 820

Brass, Copper and Tinware, etc.

Brass goods, copper and tin work	150	2 500
Lead	6	200
Gold and silver leaf	5	100
Jewelry and watches	100	1 250
Musical instruments	100	3 750
Type and type founders	8	750
Watch cases	14	50
Plating	24	650
Smelting and refining	12	350
Total	419	9 600

Minerals and Chemicals.

Chemists and works	80	375
Gunpowder	10	110
China, crockery and glassware	22	450
Inks and mucilage	13	175
Ornamental plaster works	12	120

MINERALS AND CHEMICALS—Continued.	FIRMS.	EMPLOYES.
Dentists' supplies	16	75
Smoking pipes	12	20
Glass bottles	26	210
Stove polish	4	20
Total	195	1 555

TEXTILES.

Awnings, sails and tents	26	275
Ship chandlers	5	50
Bags	7	310
Brushes	39	250
Bedding and mattresses	30	525
Clothing, manufacturing and wholesale	850	9 550
Gents' furnishing goods	180	2 550
Cloaks and suits	55	3 500
Cords and tassels	6	450
Corsets and bustles	20	250
Hosiery and knitting	33	650
Laces and embroidery	15	160
Feathers and dusters	14	250
Sewing silk and spool cotton	21	110
Dry goods and notions	155	4 100
Woolen and linens	62	375
Hair goods	12	175
Millinery and straw goods	16	1 050
Costumes, uniforms and flags	24	275
Gloves	37	500
Artificial limbs and trusses	10	125
Carpet cleaners	65	325
Carpet weavers	20	45
Dyers	27	175
Steam laundries	300	1 850
Umbrellas	7	75
Cordage	8	250
Total	2 044	28 200

FUEL AND LIGHT.

Coal and wood dealers	1 010	4 100
Gas companies	7	2 000
Calcium lights	4	20
Electric lights, works and materials	115	3 000
Total	1 136	9 120

PRINTING AND PAPER.

	FIRMS.	EMPLOYES.
Bill posters	9	100
Rags and paper stock	40	250
Wall paper and window shades	116	450
Paper boxes	34	1 625
Bookbinders and blank books	72	1 325
Books, news and stationery	18	575
Printers and publishers	945	10 500
Engravers	104	550
Lithographers (see printers)	......	......
Artists' materials and works	15	170
Paper and cardboard	77	875
Total	1 430	16 420

BUILDING TRADES.

Builders, carpenters and contractors	950	18 500
Brick, lime, cement and drain pipe	125	4 500
Glass, window, mirror and decorated	63	675
Paints, painters, oils, etc	750	3 550
Plumbers and gas fitters	620	2 400
Marble and stone	90	1 050
Paving (see also contractors)	45	1 250
Sand	27	400
Roofing	89	600
Terra cotta	3	450
Architects	390	1 210
Total	3 152	34 585

TRANSPORTATION.

Vessels	346	5 500
Railroads (steam)	80	29 500
Railroads (street)	17	8 200
Express companies	10	1 250
Telegraph and telephone companies	25	3 600
Elevators (grain)	46	450
Warehouses and storage	73	275
Livery stables	365	2 300
Docks and ship yards	9	550
Total	971	51 625

MISCELLANEOUS.

	FIRMS.	EMPLOYES.
Banks and bankers	146	1 450
Insurance	250	1 650
Real estate and office buildings	2 260	8 950
Commercial and collecting agencies	50	525
Detective agencies	21	350
Abstracts of title	8	650
Theaters, panoramas and amusements	40	975
Total	2 775	14 550

The retail trade comprises about 35 000 firms, among which are:

Groceries and flour	4 500
Meat markets	2 550
Confectioneries, fruits and pastry	2 000
Milk	1 350
Cigars and tobacco	1 750
Barber shops	1 650
Laundries	950
Undertakers	235
Blacksmiths and horseshoers	700
Harness shops	210
Dentists	680
Stationery	125
Crockery	120
Furniture	450
Boots and shoes	1 600
Clothing	300
Tailoring	900
Men's furnishing	200
Dry goods and notions	900
Druggists	875
Millinery	400
Photographers and artists	400
Watchmakers and jewelers	500
Hardware and tinware	475
Gun, locksmiths and electricians	110
Saloons	7 300
Restaurants and boarding-houses	1 800
Livery stables	365
Bird stores	20
Umbrellas	30
Trunks	10
Opticians	30
Trusses and artificial limbs	10

These 35 000 firms may be estimated at 40 000 members, many firms in the business centers being composed of two or more partners.

The total number of employers and employed includes 150 000 persons, 25 000 of whom are in the down-town business center, chiefly in dry goods, wearing apparel, jewelry, reading matter, furniture, musical instruments, saloons and restaurants. A dozen of the great dry goods and department stores employ during the busiest season about 15 000 persons; retail clothing and furniture also magnify themselves on prominent corners.

The classified list of firms engaged in transportation, manufacturing, wholesale trade, banking and other large commercial undertakings comprises 18 400 employing firms, with 300 000 persons employed, including the active members of the firms; not counting any shareholders of corporations.

The shipping registered in Chicago includes seventy-four propellers, seventy-eight tugs, three fire-boats, five side-wheel steamers, twenty-one steam canal boats, sixteen steam yachts, 123 schooners, eight sloops, eighteen sailing yachts; total 360. But a large proportion of shipping registered in other harbors arrives here during the season of navigation.

There are twenty-two trunk railroads leading to Chicago, and 75 000 miles of roads are directly tributary to this North American railroad center.

The number of men employed in the service of transportation by ship and rail varies with the amount of traffic. The surface street railways and elevated roads are being extended in various directions, and within a few years 10 000 persons will get daily employment on such roads in a city of such magnificent distances.

There were 11 200 peddlers and 8000 vehicles licensed during the year.

POPULATION OF CHICAGO BY NATIVITIES.

	NATIVITIES												
WARDS.	Americans.	Bohemians.	Canadians.	Danes.	English.	French.	Germans.	Greeks.	Hollanders.	Chinese.	Indians.	Italians.	Irish.
SOUTH													
First	21375	203	502	43	587	496	3805	162	10	1119	4	1944	3298
Second	25562	66	444	90	827	323	2193	24	30	104	9	484	2460
Third	30026	93	424	171	659	205	3788	6	9	25	2	136	2341
Fourth	27482	79	546	526	815	175	3688	18	29	26	....	48	2224
Fifth	31760	1069	502	96	857	268	8034	14	95	23	3	417	4679
Sixth	35747	373	599	9	811	179	8554	19	129	26	2	28	8301
Twenty-ninth	24861	502	515	122	790	149	4154	9	71	7	....	57	7798
Thirtieth	52337	2116	1430	311	2039	325	10783	21	423	25	6	110	6087
Thirty-first	29481	195	754	179	1245	70	3084	21	811	13	3	202	1629
Thirty-second	35744	38	877	223	1364	157	2125	10	50	19	22	28	2533
Thirty-third	19773	86	260	345	815	246	3349	1	39	20	....	26	1898
Thirty-fourth	37370	251	1224	380	1975	417	4338	11	3343	17	12	298	2315
WEST													
Seventh	21094	2378	90	13	203	67	7052	18	97	24	....	258	2105
Eighth	21837	9643	321	9	247	296	4417	16	163	11	4	86	3033
Ninth	24199	7676	307	51	381	368	7660	70	773	21	....	48	4811
Tenth	42209	5957	457	115	819	178	11237	3	195	24	9	178	5268
Eleventh	29299	93	660	435	1247	382	2747	4	103	32	2	155	4377
Twelfth	49824	221	1463	271	2605	373	4169	3	114	34	6	213	3273
Thirteenth	33742	47	697	417	1496	195	4108	9	235	21	4	292	4300
Fourteenth	30242	394	218	1391	466	125	15034	3	186	17	2	64	1883
Fifteenth	39021	158	406	1469	1118	190	12227	....	83	16	2	90	2510
Sixteenth	30338	730	94	857	242	126	8650	2	30	18	....	98	1068
Seventeenth	13950	25	197	955	285	163	3017	3	22	31	....	1962	1822
Eighteenth	23509	70	551	97	1074	257	4039	94	19	83	8	268	4626
Nineteenth	27271	1385	990	50	761	757	3831	77	56	42	9	4586	8530
Twenty-eighth	11772	465	548	146	585	58	1478	3	85	7	9	17	1591
NORTH													
Twentieth	23235	81	226	57	411	72	10169	16	9	9	6	46	976
Twenty-first	22732	89	259	97	514	85	12083	14	22	14	2	53	731
Twenty-second	22398	65	183	78	432	121	12825	10	13	16	20	195	1036
Twenty-third	21561	48	204	61	417	160	3995	41	15	21	4	1589	7138
Twenty-fourth	27025	35	654	112	1168	217	4909	69	33	41	6	87	3685
Twenty-fifth	22883	43	424	194	757	104	5775	2	33	3	....	31	870
Twenty-sixth	27020	65	267	193	769	73	14263	13	....	18	2	75	875
Twenty-seventh	12113	221	242	188	494	36	3844	....	59	5	2	25	366
TOTALS BY													
South Division	371518	5071	8077	2495	12784	3010	57895	316	5039	1424	63	3778	46163
West Division	398307	29242	6999	6279	11529	3535	90566	315	2161	381	55	8315	49197
North Division	179267	647	2459	980	4962	868	67863	165	184	127	42	2101	15677
Grand totals	949092	34960	17535	9754	29275	7413	216324	796	7384	1932	160	14194	111037

Official Census, April, 1894.

BY DIVISIONS.

DIVISION.

Norwegians.	Polanders.	Portuguese.	Roumanians.	Russians.	Scotch.	Spanish.	Swedes.	Arabians.	Welsh.	Belgians.	Swiss.	Austrians.	Mexicans.	Persians.	Wards.
113	210	....	2	418	358	21	388	141	5	11	74	237	4	6	First
43	48	....	2	122	241	36	615	....	25	4	37	107	5	4	Second
91	35	....	....	60	253	3	1543	....	19	11	33	61	4	4	Third
108	51	....	....	138	375	10	1122	....	27	6	26	96	....	2	Fourth
153	99	2	....	97	415	23	2547	....	4	15	97	472	....	....	Fifth
97	4190	....	....	134	429	4	844	....	168	23	40	265	....	....	Sixth
45	1265	....	....	107	249	14	397	....	63	14	11	183	....	....	Twenty-ninth
265	2030	4	....	147	763	10	4453	....	56	18	120	181	2	....	Thirtieth
103	50	....	....	68	548	11	1258	....	45	14	55	35	....	2	Thirty-first
159	48	....	....	19	519	9	1582	....	45	7	31	57	....	....	Thirty-second
288	3781	....	....	105	258	9	2556	....	217	12	17	293	....	1	Thirty-third
453	273	....	....	55	689	16	3421	....	103	67	81	247	3	2	Thirty-fourth

DIVISION.

Norwegians.	Polanders.	Portuguese.	Roumanians.	Russians.	Scotch.	Spanish.	Swedes.	Arabians.	Welsh.	Belgians.	Swiss.	Austrians.	Mexicans.	Persians.	Wards.
52	2050	2	44	8011	76	....	137	....	2	32	36	440	....	....	Seventh
24	445	....	....	939	104	....	96	....	10	34	18	304	....	....	Eighth
69	2199	....	14	177	146	6	354	....	12	42	33	222	....	....	Ninth
274	2805	....	....	100	395	6	1703	....	23	23	29	83	2	....	Tenth
1985	71	....	....	74	743	20	963	1	148	1	23	172	....	9	Eleventh
397	63	....	....	67	1153	13	646	....	225	26	32	131	2	2	Twelfth
984	45	....	....	30	645	15	814	....	52	32	39	84	....	10	Thirteenth
3151	808	....	....	529	338	17	1543	....	39	58	97	466	....	....	Fourteenth
3086	3760	....	...	267	497	4	2723	....	51	54	70	122	....	....	Fifteenth
4658	17972	....	....	312	125	2	1422	....	....	25	42	207	....	....	Sixteenth
3464	2222	....	....	91	143	....	1153	....	13	12	134	95	....	14	Seventeenth
97	86	2	....	220	588	11	438	....	110	8	20	92	....	....	Eighteenth
59	871	2	....	2699	389	9	123	....	163	27	46	963	2	31	Nineteenth
470	65	....	....	16	289	13	602	....	21	4	27	16	....	....	Twenty-eighth

DIVISION.

Norwegians.	Polanders.	Portuguese.	Roumanians.	Russians.	Scotch.	Spanish.	Swedes.	Arabians.	Welsh.	Belgians.	Swiss.	Austrians.	Mexicans.	Persians.	Wards.
83	293	....	....	19	137	5	519	....	7	8	76	86	....	....	Twentieth
105	18	....	....	19	145	6	417	....	11	6	75	63	4	....	Twenty-first
167	40	....	....	36	146	16	2611	....	11	12	128	107	....	4	Twenty-second
289	519	....	....	42	195	9	13512	....	2	67	37	48	....	6	Twenty-third
120	47	....	....	39	377	48	1599	....	25	5	55	51	1	13	Twenty-fourth
313	30	....	....	15	316	4	4017	....	21	38	58	41	....	....	Twenty-fifth
243	1180	.. .	....	39	259	4	1827	....	12	46	37	55	....	....	Twenty-sixth
397	212	....	....	40	157	5	818	....	35	16	42	51	....	....	Twenty-seventh

DIVISIONS.

Norwegians.	Polanders.	Portuguese.	Roumanians.	Russians.	Scotch.	Spanish.	Swedes.	Arabians.	Welsh.	Belgians.	Swiss.	Austrians.	Mexicans.	Persians.	Wards.
1918	12080	6	4	1470	5097	106	20726	141	777	202	623	2234	18	21	South Division
18770	33462	6	58	13532	5631	116	12717	1	869	378	643	3397	6	66	West Division
1717	2339	....	....	249	1732	97	25320	....	124	198	508	502	5	23	North Division
22405	47881	12	62	15251	12460	319	58763	142	1770	778	1774	6133	29	110	Grand totals

Carter H. Harrison Free Public Bath.

Thos. K. Forman, *Superintendent.*

The Carter H. Harrison Public Bath, situated at 192 Mather street, in the center of a dense population of working people, is a handsome structure of pressed brick and brown stone, 25 feet wide by 110 feet deep. In the basement is the laundry and two furnaces—one for heating the building the other for heating water for the baths. In the front of the main floor is a waiting room 16 feet square, with seating accommodations for forty people. Beyond this are the bath rooms, with necessary toilet accommodations—occupying 1550 square feet of surface. They consist of 18 shower and tub baths, supplied with hot and cold water, soap and towels, combs, button hooks, etc. By allowing 25 minutes for a bath the capacity is 2600 persons per week.

On entering the waiting room each person is given a numbered check, which checks are called in consecutive order as the bath rooms are vacated. Two minutes are allowed for undressing after entering the bath room, when the water is turned on for 8 minutes; about 1 minute before the water is turned off notice is given to allow time for the final rinse-off—at the same time notice is given, and placards also advise, that 15 minutes are allowed for dressing.

About 400 towels are used daily, and during the year we have used 6000 cakes of soap and about 100 tons of coal.

The monthly attendance for 1894 was as follows:

January,	2450	July,	9951
February,	4500	August,	11 766
March,	5979	September,	9338
April,	7610	October,	7848
May,	7948	November,	6852
June,	10 186	December,	6951

Total for the year, 91 379—of whom 20 334 were females.

The total expenditures on all accounts were $3469.65, and the average expense of each bath given was, therefore, about three and four-fifths cents.

The Bath is utilized almost exclusively by the working people of the neighborhood and their families. Mondays and Thursdays are reserved for women, girls and small children with their mothers, and the water then furnished is at a temperature of 105°; on other days the temperature is kept at 100°. On these days—Mondays and Thursdays—there is a large attendance of shop girls. Many people resort to the Bath not only for purposes of cleanliness, but for relief from rheumatism and other diseases with, as they claim, good results.

The usefulness of the Bath has been so far demonstrated as to warrant its extension and improvement in some minor details. More showers should be added and the corrugated iron partitions, which are rapidly rusting, should be replaced with slate. It is only a question of time when the present capacity will have to be doubled or even trebled, and as soon as practicable, one division should be given over to women and children exclusively, so that these free baths may be available to them every day instead of only twice a week.

Record of Meat Condemned, Scavenger Permits Issued, and Financial Statement.

J. F. McCarty, *Secretary of the Department.*

Meat Condemned on the South Water Street and Fulton Markets, and at Depots.

Months, 1894.	Veal. Pounds.	Sheep. Pounds.	Beef. Pounds.	Hogs. Pounds.	Poultry and Game. Pounds.	Total Amount. Pounds.
January	2 740	780	1 716	190	800	6 226
February	1 206	374	1 346	450	374	3 750
March	1 147	406	1 047	420	706	3 726
April	16 723	274	1 947	180	547	19 691
May	7 504	210	674	450	757	9 595
June	2 103	3 460	1 220	980	874	8 637
July	10 601	2 590	870	701	704	15 466
August	11 203	406	1 208	93	179	13 089
September	1 744	604	370	140	159	5 017
October	2 706	274	1 674	70	106	4 830
November	1 334	7 634	780	30	370	10 148
December	579	430	1 634	947	790	4 380
Total	59 590	17 442	14 486	4 651	6 366	103 965

MEAT CONDEMNED AT THE UNION STOCK YARDS.

MONTHS.	Lumpy Jaw Cattle. Pounds.	Cattle Bruised and Emaciated Pounds.	Calves Condemned. Pounds.	Hogs Bruised and Cholera. Pounds.	Sheep Bruised and Emaciated Pounds.	Total Condemned. Pounds
January	115 840	22 410	1 850	16 590	2 350	159 040
February	116 420	19 450	4 160	22 540	1 940	164 510
March	89 700	29 745	3 180	36 475	3 175	162 275
April	93 640	64 950	3 250	37 740	3 360	202 940
May	79 200	34 375	2 803	19 580	3 050	139 005
June	51 050	54 070	4 040	39 150	3 970	152 280
July	59 000	44 575	3 670	20 280	4 340	140 555
August	26 300	52 200	3 875	38 100	4 475	124 950
September	84 700	59 340	3 820	32 290	4 600	184 750
October	77 510	27 500	2 060	19 780	2 880	129 730
November	81 590	35 760	6 080	27 765	2 640	153 835
December	133 060	62 150	9 002	29 176	5 450	238 838
Total	1 008 010	506 525	47 787	348 466	42 230	1 952 718

RECORD OF PERMITS ISSUED TO NIGHT SCAVENGERS TO CLEAN VAULTS.

Number of Cubic Yards During 1894.

Months.	Number of Vaults.	Cubic Yards Removed.
January	423	825
February	412	802
March	607	1 224
April	927	1 874
May	859	1 710
June	1 322	2 640
July	1 680	3 360
August	1 722	3 410
September	3 408	7 048
October	1 310	2 620
November	975	1 950
December	855	1 710
Total	14 500	29 173

DEPARTMENT OF HEALTH—DIVISION OF ACCOUNTS.

Monthly Expenditures on all Accounts and Total Disbursements for the Calendar Year, ended December 31, 1894.

MONTHS.	Salaries of Officers and Medical Inspectors.	Salaries of Smallpox Hospital Employes.	Smallpox Hospital Supplies.	Printing and Stationery.	Disinfectants, Drugs and Chemical Work.	Miscellaneous Expenses.	Milk Division.	Bath.	New Hospital.	Totals.
January	$ 6 042.10	$ 1 187.50	$ 8 123.09	$ 238.25	$ 120.00	$ 183.40	$1 164.28	$ 413.55	....	$ 17 472.17
February	6 091.07	1 615.00	6 773.12	415.85	73.01	92.40	120.83	292.00	....	15 473.28
March	11 234.76	1 795.76	8 136.99	152.40	237.20	46.35	980.17	351.42	....	22 935.05
April	7 820.69	2 535.74	14 530.82	177.10	130.56	125.25	139.07	324.50	....	25 783.73
May	7 850.86	23 312.40	53 931.29	255.55	54.06	164.65	173.85	184.44	....	85 927.10
June	7 729.89	34 783.12	39 266.73	333.50	....	98.10	138.92	342.88	....	82 693.14
July	7 842.46	9 585.59	5 242.47	308.35	93.75	55.60	142.09	190.55	....	23 550.86
August	7 909.32	5 307.85	4 182.01	123.05	....	31.71	125.35	370.28	....	18 049.57
September	7 900.77	4 530.71	10 219.74	156.75	....	73.30	137.17	197.99	....	23 216.43
October	8 090.05	4 497.73	4 310.51	20.10	....	248.50	62.67	298.44	....	17 447.00
November	7 924.80	4 413.21	7 395.15	719.70	....	190.70	241.12	240.30	$2 210.84	23 335.82
December	7 720.74	4 319.81	4 982.11	472.80	....	383.15	131.93	263.30	1 375.84	19 649.68
Total	$ 94 076.51	$ 97 884.42	$167 094.03	$ 3 463.40	$ 708.58	$ 1 693.11	$3 557.45	$3 460.65	$3 586.68	$375 533.83

NOTE.—The sum of $1731.51—receipts from miscellaneous sources—was turned over to the Comptroller during the year.

ROSTER OF THE DEPARTMENT.

ARTHUR R. REYNOLDS, M. D., - COMMISSIONER OF HEALTH.
Lakota Hotel.

J. F. McCARTY, - Secretary.
166 La Salle Avenue.

W. A. KIMMIT, M. D. (from August, 1894), Registrar of Vital Statistics.
358 Webster Avenue.

J. J. DILLON, - Clerk of Vital Statistics.
2352 Ashland Avenue.

C. E. STIMMING, - Department Clerk.
97 Sigel Street.

MISS MAGGIE D. NOONAN, - Stenographer.
758 Fifty-ninth Street.

*W. M. MOORE, - Clerk.
354 LaSalle Avenue.

DIVISION OF CONTAGIOUS DISEASES.

E. GARROTT, M. D., - CHIEF MEDICAL INSPECTOR.
731 Washington Boulevard.

INSPECTORS.

A. M. BRIANZA, M. D., - 612 W. Adams Street.
C. F. CHAPMAN, M. D., - 252 Warren Avenue.
M. L. GOODKIND, M. D., - 2948 Indiana Avenue.
J. P. LETTS, M. D., - 229 E. Division Street.
H. SPALDING, M. D., - 3141 Rhodes Avenue.
F. M. TRUDE, M. D., - 230 Twenty-second St.

VACCINATORS.

*JOHN A. BENSON, M. D., - 252 Warren Avenue.
*E. CZERNIEWSKI, M. D., - 1025 N. Hoyne Avenue.
*DON S. HARVEY, M. D., - 227 Ninety-second St.
M. O. HECKARD, M. D., - 1251 W. Madison Street.
*D. C. MOORE, M. D., - 643 N. Hoyne Avenue.
*C. J. OCASEK, M. D., - 612 Throop Street.
*A. M. SHABAD, M. D., - 179 W. Twelfth Street.
*A. J. KENZIE, - 2107 Grand Avenue.
*H. L. PELKUS, - 305 W. Madison Street.
*JOHN RUSSELL, - 1068 W. Adams Street.

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* Emergency.

DISINFECTORS.

Malcolm Gunn, M. D.,	2101 Calumet Avenue.
George C. Hunt, M. D.,	1529 W. Monroe Street.
J. Daly,	91 W. Thirteenth Street.
M. J. Golden,	3907 Indiana Avenue.
T. F. Grady,	1024 Walnut Street.
P. J. Hartman,	53 Goethe Street.
Edward Kelly,	168 Oak Street.
W. F. Kelly,	28 Ashland Avenue.
Frank Knittle,	772 Cortland Street.
*A. D. Lacy,	1257 Sixty-first Street.
*P. J. O'Neill,	340 Ohio Street.
M. Pendergast,	3221 Butler Street.
*W. X. Quinn,	493 Forty-fourth Place.
Christopher Riley,	2727 Cottage Grove Avenue.

AMBULANCE FORCE.

Thomas Flood, Driver,	523 Austin Avenue.
*Walter Lambert, Barn Foreman,	293 Elm Street.
*M. Calvin, Driver,	201 Blue Island Avenue.
*C. E. Moore, Driver,	224 DeKoven Street.
*M. Mahoney, Hostler,	3846 Dearborn Street.

MUNICIPAL LABORATORY.

ADOLPH GEHRMANN, M. D., - - - - - SUPERINTENDENT.
4120 Langley Avenue.

Cass L. Kennicott, - - - - - - - - - Chemist.
4150 Ellis Avenue.

MILK AND FOOD INSPECTORS.

A. Bender,	4416 State Street.
Nicholas Cook,	155 Twenty-eighth Street.
P. R. Downey,	187 Osgood Street.
Geo. W. Goodno,	5628 Drexel Boulevard.
John Rolson,	131 W. Indiana Street.
J. J. Sullivan,	Front Street, Kensington.
Walter Beck, Helper,	Thirty-eighth and Vincennes Ave.
Christopher Dorn, Clerk,	735 Taylor Street.

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* Emergency.

BUREAU OF TENEMENT AND FACTORY INSPECTION.

ANDREW YOUNG, - - - - - - CHIEF SANITARY INSPECTOR.
1025 Wilcox Avenue.

JOSEPH GRUENHUT, - - - - - - - - - - Statistician.
3745 Johnson Place.

F. H. BARKES, - - - - - - Clerk of Records of Inspections.
31 Willow Street.

C. BOTTHOFF, - - - - Clerk of Records of Plumbing Inspection.
412 Wells Street.

H. W. DAVIS, - - - - - - Clerk of Records of Complaints.
256 Forty-fifth Street.

TENEMENT AND FACTORY INSPECTORS.

J. C. HAWLEY, M. D.,	3435 South Park Avenue.
W. J. BURKE,	3622 Paulina Street.
GORDON CAMERON,	169 Fifty-first Street.
R. J. DUNLOP,	Fortieth and Madison Sts.
J. HOPKINS.	148 E. Eighteenth Street.
W. V. MAGNUS.	238 Elm Street.
J. E. MCGINLEY,	208 Forquer Street.
J. F. MCGINNIS,	55 E. Twenty-fifth Street.
LOUIS RABIG,	4532 Dreyer Street.
CHARLES RANK,	179 Moore Street.
J. J. SODEN,	127 Washburn Avenue.
HENRY SPIES,	163 Racine Avenue.
FRANK STYX,	2351 Wentworth Avenue.
FRANK TAYLOR,	390 S. Morgan Street.
J. W. TOTTEN,	1521 Belmont Avenue,
MRS. C. DOOLITTLE,	24 Groveland Park.
MRS. MARY GLENNON,	22 Wisconsin Street.
MRS. MARY MCCORMICK,	370 Sheffield Avenue.
MRS. MARY MULVIHILL,	118 Austin Avenue.
MRS. IDA SULLIVAN,	7008 St. Lawrence Avenue.
MRS. ELIZABETH TAYLOR,	62 W. Lake Street.

PLUMBING INSPECTORS.

J. L. Casey, - - - - - 5317 Princeton Avenue.
T. C. Connor, - - - - - 362 Thirty-third Street.
J. J. Cunningham, - - - - 639 S. Fairfield Avenue.
W. F. Dillon, - - - - - 750 Warren Avenue.
George Giltzow, - - - - 5405 Dearborn Street.
E. T. Grannin, - - - - 788 Fulton Street.
J. F. Jordan, - - - - - 3129 Archer Avenue.
Wm. Keegan, - - - - - 35 Grace Street.
J. S. Kelly, - - - - - 172 Throop Street.
W. F. McCarthy, - - - - Lytle Street.
P. Pinter, - - - - - 817 N. Clark Street.
J. Scanlon, - - - - - 360 May Street.
John Schenk, - - - - - 60 Bowen Avenue.

BUREAU OF SMOKE INSPECTION.

F. U. ADAMS, - - - - - - - - Chief Smoke Inspector.
310 Sixty-first Street.
W. T. Hogan, Clerk, - - - - - 1438 Monroe Street.

INSPECTORS.

E. A. Flynn, - - - - - - - 1836 Emerald Avenue.
John Murray, - - - - - - - 330 W. Monroe Street.
John O'Keefe, - - - - - - - Mecca Hotel.

MEAT AND STOCK YARDS INSPECTION.

MATTHEW LAMB, - - - - - - - - Chief Inspector.
3305 Auburn Avenue.

INSPECTORS.

Peter Flaherty, - - - - - - 2905 Wallace Street.
Robert J. Huston, - - - - - - 558 Duncan Park.
August Klaas, - - - - - - - 819 Davis Street.
George J. McDonald, - - - - - 383 W. Polk Street.
Thomas J. McGivern, - - - - - 191 Superior Street.
George McKeown, - - - - - - 3638 La Salle Street.
T. J. O'Hern, - - - - - - - 38 Johns Place.
P. J. O'Malley, - - - - - - 3650 Fifth Avenue.
J. Trench, - - - - - - - - 346 W. Adams Street.

Chronological Summary

OF

CHICAGO MORTALITY

1851-1894

NOTE TO CHRONOLOGICAL SUMMARY OF CHICAGO MORTALITY.

No monthly records of mortality for the year 1876 have been discovered by the present Commissioner of Health.

Prior to July, 1876, the health administration of Chicago was under the charge of an officer styled Sanitary Superintendent. The present form of administration—that of a Department of Health—was created by a Municipal Ordinance of July 19, 1876. and the first Commissioner of Health, Dr. **BROCK MCVICKAR**, was appointed July 24, but resigned November 22d of the same year, and the office remained vacant until January 29, 1877, when Dr. O. C. **DEWOLF** was appointed Commissioner.

Mr. H. P. **WRIGHT**, Registrar of Vital Statistics in 1876, made a report in manuscript for that year to the Mayor and City Council: but in the first published report of the Department, dated January 1, 1878, and being for the years 1876-77, only the total number of deaths from specified causes for 1876 are given—not the returns by months.

The following tables are, therefore, defective to this extent, and also, in a minor degree, as to the year 1871, some of the monthly records of that year having been destroyed in the Great Fire of October 8-9, 1871.

The total mortality from specified causes is, however, given for each year for the entire period of forty-four years, and with increasing fullness and accuracy since the passage and enforcement of the ordinance of December 10, 1891, forbidding the burial or removal of any dead human body within the corporate limits of the city without a permit from the Commissioner of Health, which permit is given only upon a legally-qualified physician's certificate of the cause of death.

It has seemed worth the labor involved to rescue these statistics from oblivion, and to put them in accessible form for the Sanitarian and for succeeding Commissioners of Health. Their study reveals many interesting and instructive facts bearing upon the changes in prevalent causes of death, and upon the results of improved sanitary conditions as affecting the public health.

The tables have been compiled from the reports of the various Health Officers, Sanitary Superintendents and Commissioners: from the early files of the *Chicago Medical Examiner*, in which for many years Dr. N. S. **DAVIS**, Sr., made a feature of such information; from Dr. **JOHN H. RAUCH'S** *Sanitary History of Chicago:* 1833–1870; from reports on the *Cholera Epidemic of 1873* (Ex. Doc. No. 95, 43d Cong.), by Drs. **JOHN M. WOODWORTH** and F. W. **REILLY**, U. S. Marine Hospital Service, and Surgeon **ELY MCCLELLAN**, U. S. Army; and from *Zymotic Diseases in Chicago:* 1890–1892, by Dr, F. W. **REILLY**, Secretary of the Illinois State Board of Health (1893).—*A. R. R.*

Chronological Summary of Principal Causes of Mortality

In the City of Chicago: 1851-1894, Inclusive.

Consumption.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes—Deaths per 10 000 of population—Annual death rates from all causes—For the years 1851 to 1894 inclusive.

Years.	Months.													Consumption Mortality.		
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Percentages of total mortality.	Per 10 000 of population.	Annual death rates from all causes per 1000 of population.
1851	....	....	....	....	....	4	6	4	9	5	6	8	42	4.53	12.35	36.60
1852	4	6	7	12	7	9	7	10	11	17	10	16	116	6.41	30.00	46.70
1853	14	7	9	9	15	13	17	17	20	12	19	24	176	13.28	29.83	22.40
1854	26	14	17	21	13	26	7	19	14	29	20	10	216	5.12	32.73	64.00
1855	9	8	22	17	19	5	7	12	16	15	17	15	162	7.43	20.25	27.20
1856	27	24	17	12	17	19	24	26	22	30	42	28	288	13.86	34.29	24.80
1857	19	24	20	25	22	16	12	14	29	32	21	21	255	10.56	29.11	27.55
1858	23	31	38	21	24	27	38	32	18	26	26	30	334	15.01	37.11	24.72
1859	24	22	13	31	25	13	17	14	24	32	22	19	256	12.75	27.53	21.30
1860	21	22	26	19	16	18	25	26	17	21	32	33	276	12.19	25.28	20.70
1861	34	24	25	23	18	22	14	28	44	19	31	38	320	14.04	26.66	18.90
1862	33	38	46	35	23	23	23	20	23	41	26	17	348	12.27	25.22	20.51
1863	20	29	37	28	23	16	22	18	24	21	15	30	283	7.28	18.87	25.80
1864	37	41	39	39	40	31	32	27	28	25	41	30	410	9.22	24.26	26.26
1865	34	32	30	35	30	18	23	31	31	32	18	26	340	9.28	19.05	22.50
1866	25	18	34	38	39	22	28	39	31	46	43	43	406	6.85	20.30	32.20
1867	42	44	40	31	34	35	34	23	25	25	34	37	404	8.69	17.95	21.10
1868	38	42	43	29	38	23	34	43	36	36	34	23	422	7.05	16.75	23.70
1869	46	34	31	54	45	37	40	38	46	46	49	51	503	7.75	17.96	23.10
1870	43	38	46	57	57	45	41	44	35	53	49	33	541	7.39	17.68	23.88
1871	51	46	54	48	51	43	48	46	....	36	33	44	500	7.17	14.97	20.87
1872	51	61	49	67	56	56	61	55	59	59	54	82	710	6.99	19.35	27.67
1873	50	58	60	63	52	49	41	51	48	53	56	58	639	6.69	16.80	25.16
1874	53	54	67	54	54	41	40	43	53	64	53	54	630	7.80	15.95	20.29
1875	59	55	71	67	72	48	42	44	48	68	57	62	693	8.77	17.32	19.72
1876	....	....	....	....	....	....	....	....	....	....	....	....	732	8.54	17.96	21.02
1877	62	56	82	71	72	66	56	59	44	56	53	56	733	9.13	17.00	18.68
1878	49	54	78	60	65	44	61	52	59	65	60	50	697	9.39	15.96	16.99
1879	68	59	63	67	64	64	54	54	49	72	63	68	745	8.65	15.17	17.52
1880	70	75	92	79	64	72	66	71	70	80	59	55	853	8.15	16.95	20.79
1881	99	76	82	115	84	71	85	77	78	81	92	97	1037	7.48	19.20	25.60
1882	120	95	112	75	93	88	91	70	71	68	65	94	1042	7.87	18.61	23.60
1883	99	79	94	93	99	71	83	73	94	60	80	91	1016	8.79	17.52	19.92
1884	84	65	94	105	88	95	80	72	72	76	97	103	1034	8.29	16.41	19.80
1885	109	100	107	109	110	80	91	84	88	94	103	87	1162	9.31	17.47	18.76
1886	92	86	112	126	125	113	88	91	85	92	85	104	1199	8.77	17.03	19.43
1887	135	114	137	116	119	97	112	125	91	105	100	101	1352	8.77	17.79	20.27
1888	124	132	124	130	135	130	112	103	107	114	111	104	1426	9.04	17.75	19.65
1889	112	112	134	117	126	101	131	126	121	139	126	144	1489	8.78	15.92	17.56
1890	224	178	191	166	181	131	150	167	153	138	143	150	1972	9.02	16.32	18.09
1891	159	173	231	231	212	149	164	171	134	160	154	182	2120	7.64	16.96	22.20
1892	188	188	208	202	191	177	192	155	151	160	167	198	2177	8.30	15.14	18.23
1893	198	198	213	203	253	193	186	166	179	147	169	210	2315	8.55	14.47	16.92
1894	177	152	176	200	229	187	178	185	183	165	152	171	2155	9.02	13.74	15.24

NOTE TO CONSUMPTION TABLE.

Beginning with the year 1879 deaths from *Tuberculosis* other than *Pulmonary* have been recorded separately. The following additions should, therefore, be made to the figures in the preceding Table for the years 1879-1894 inclusive, in order to arrive at the full proportions of the mortality from the tuberculous diseases:

YEARS.	DEATHS FROM		Total deaths from Tuberculosis.	TUBERCULOSIS MORTALITY.		Annual death rate from all causes per 1000 of population.
	Consumption.	Other Tuberculoses.		Percentages of total mortality.	Per 10 000 of population.	
1879	745	232	977	11.34	19.88	17.52
1880	853	169	1022	9.77	20.31	20.79
1881	1037	202	1239	8.79	22.94	25.60
1882	1042	190	1132	8.55	20.19	23.60
1883	1016	181	1197	10.36	20.64	19.92
1884	1034	199	1233	9.97	19.57	19.89
1885	1162	172	1334	10.69	20.07	18.76
1886	1199	184	1383	10.09	19.64	19.43
1887	1352	196	1548	10.00	20.37	20.27
1888	1426	191	1617	10.25	20.14	19.65
1889	1489	211	1700	10.03	18.18	17.56
1890	1972	259	2231	10.21	18.59	18.09
1891	2120	301	2421	8.72	19.37	22.20
1892	2177	279	2456	9.37	17.08	18.23
1893	2315	413	2728	10.07	17.00	16.92
1894	2155	359	2514	10.52	16.04	15.24

PNEUMONIA.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes—Deaths per 10 000 of population—Annual death rates from all causes—For the years 1851 to 1894 inclusive.

YEARS.	MONTHS.													PNEUMONIA MORTALITY.		Annual death rates from all causes per 1000 of population.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Percentages of total mortality.	Per 10 000 of population.	
1851	....	....	....	....	....	....	1	3	1	....	1	2	8	0.86	2.35	36.60
1852	1	6	9	4	3	1	3	....	1	1	....	1	30	1.66	7.75	46.70
1853	2	2	5	5	2	1	1	....	2	2	2	4	28	2.11	4.75	22.40
1854	4	3	4	4	4	1	1	6	4	1	....	3	35	0.83	5.31	64.00
1855	5	4	8	6	3	3	3	1	1	....	9	4	47	2.15	5.87	27.20
1856	1	5	1	13	10	1	2	3	3	2	2	3	46	2.21	5.48	24.80
1857	9	4	6	6	5	3	....	4	1	2	4	6	50	2.07	5.70	27.55
1858	12	12	8	2	5	8	9	1	5	1	10	4	77	3.46	8.55	24.72
1859	1	7	11	6	7	2	3	4	2	2	2	6	53	2.64	5.70	21.30
1860	5	4	1	9	3	6	3	2	4	2	3	6	48	2.12	4.40	20.70
1861	9	5	12	2	7	5	7	....	1	....	2	5	55	2.41	4.58	18.90
1862	15	6	6	11	6	7	6	12	2	3	2	12	88	3.10	6.42	20.51
1863	9	11	18	13	10	8	8	8	7	7	15	12	126	3.24	8.40	25.80
1864	18	16	18	16	15	14	6	1	13	14	10	22	163	3.66	9.62	26.26
1865	8	15	24	28	7	5	4	10	2	7	17	23	150	4.10	8.40	22.50
1866	15	18	20	25	16	11	14	15	9	9	15	20	187	3.15	9.33	32.20
1867	11	20	13	22	17	3	11	4	8	11	19	32	171	3.68	7.60	21.10
1868	49	58	28	26	19	27	24	11	14	18	24	43	341	5.70	13.55	23.70
1869	35	42	34	34	21	27	19	10	12	24	34	21	313	4.82	11.18	23.10
1870	31	34	48	56	26	13	8	14	17	10	19	38	314	4.29	10.24	23.88
1871	42	48	49	49	43	26	21	13	....	31	30	34	386	5.53	11.55	20.87
1872	53	67	63	51	22	18	15	18	20	30	47	58	462	4.55	12.57	27.67
1873	69	38	44	41	54	35	21	19	27	16	31	40	435	4.55	11.45	25.16
1874	62	53	46	48	26	14	17	11	12	29	26	33	377	4.67	9.54	20.29
1875	62	48	68	59	52	24	20	15	13	36	36	60	493	6.02	12.30	19.72
1876	....	....	....	....	....	....	....	....	....	....	....	....	361	4.24	8.92	21.02
1877	39	39	39	40	35	21	22	11	14	19	31	35	345	4.30	8.02	18.68
1878	42	38	46	50	20	17	16	12	22	16	34	64	377	5.08	8.63	16.99
1879	65	57	49	55	40	29	14	12	16	24	43	56	460	5.34	9.35	17.52
1880	51	52	94	122	69	38	27	31	24	30	37	58	633	6.05	12.58	20.79
1881	81	56	71	87	85	45	42	39	31	36	62	72	707	5.10	13.09	25.60
1882	122	94	113	110	67	62	30	32	28	32	61	78	829	6.26	14.80	23.60
1883	81	92	73	85	63	31	24	35	37	46	54	73	694	6.01	11.97	19.92
1884	85	73	72	85	82	43	49	29	26	33	52	84	713	5.71	11.32	19.80
1885	94	91	76	85	82	59	41	22	35	26	44	81	736	5.90	11.07	18.76
1886	69	93	119	125	83	43	47	47	39	50	63	102	880	6.42	12.64	19.43
1887	125	112	136	129	91	53	42	49	39	53	84	95	1008	6.54	13.26	20.27
1888	164	152	153	131	92	68	34	26	40	69	62	114	1105	7.01	13.76	19.65
1889	128	111	145	126	83	57	47	44	61	93	107	167	1170	6.90	12.51	17.56
1890	518	295	172	283	166	78	41	59	65	85	123	188	2073	9.48	17.15	18.09
1891	280	233	722	548	259	112	87	51	65	112	150	279	2898	10.44	23.18	22.20
1892	407	362	276	241	196	128	83	69	121	129	171	214	2397	9.14	16.67	18.23
1893	325	254	308	365	265	141	79	67	61	118	224	250	2457	9.07	15.37	16.92
1894	171	118	147	230	187	141	71	68	64	86	129	108	1520	6.36	9.69	15.24

BRONCHITIS.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes—Deaths per 10 000 of population—Annual death rates from all causes—For the years 1851 to 1894 inclusive.

YEARS.	MONTHS.													BRONCHITIS MORTALITY.		Annual death rates from all causes per 1000 of population.
	January.	February.	March.	April.	May.	June.	July	August.	September.	October.	November.	December.	Total.	Percentages of total mortality.	Per 10 000 of population.	
1851	....	....	....	....	....	....	1	....	....	....	1	....	2	0.22	0.59	36.60
1852	....	....	1	....	....	....	....	....	....	....	....	....	1	0.05	0.26	46.70
1853	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	22.40
1854	....	....	....	1	....	....	....	....	....	....	1	3	5	0.12	0.76	64.00
1855	....	....	....	1	....	....	....	....	....	....	....	....	1	0.05	0.12	27.20
1856	....	....	....	....	1	....	....	....	....	....	1	....	2	0.10	0.24	24.80
1857	....	....	....	....	....	....	....	1	....	....	....	....	1	0.04	0.11	27.55
1858	1	....	....	....	....	....	....	....	....	....	....	....	1	0 04	0.12	24.72
1859	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	21.30
1860	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	20.70
1861	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	18.90
1862	....	....	....	....	....	....	....	1	....	....	....	....	1	0.04	0.07	20.51
1863	....	....	....	....	....	....	....	....	....	1	1	....	2	0.05	0.13	25.80
1864	1	1	....	....	....	....	....	....	....	1	....	....	3	0.07	0.19	26.26
1865	....	....	1	....	....	....	....	....	....	....	....	....	1	0.03	0.06	22.50
1866	2	....	1	1	1	1	....	1	....	1	....	1	9	0.15	0.45	32.20
1867	1	1	1	1	....	....	3	2	1	2	8	4	24	0.52	1.07	21.10
1868	11	12	9	4	8	3	....	3	3	8	6	9	76	1.27	3.02	23.70
1869	8	6	8	3	4	5	3	....	6	2	7	11	63	0.97	2.25	23.10
1870	9	15	20	20	7	7	4	9	6	7	9	13	126	1.72	4.10	23.88
1871	11	15	14	9	17	12	5	....	....	7	5	9	104	1.49	3.11	20.87
1872	26	23	29	19	13	6	10	10	5	6	11	20	178	1.75	4.84	27.67
1873	29	21	26	16	28	11	11	11	12	10	15	25	215	2.25	5.66	25.16
1874	34	22	18	12	6	7	6	4	8	11	12	14	154	1.91	3.89	20.29
1875	23	19	17	27	18	12	13	11	3	5	15	32	195	2.47	4.86	19.72
1876	....	....	....	....	....	....	....	....	....	....	....	....	189	2.20	4.63	21.02
1877	17	17	30	21	18	7	6	4	11	11	18	22	182	2.27	4.23	18.68
1878	41	31	36	28	26	13	12	11	12	10	37	32	289	3.89	6.61	16.99
1879	46	33	26	12	11	14	4	9	11	15	29	22	232	2.69	4.72	17.52
1880	17	26	52	67	38	20	12	17	19	17	27	36	348	3.33	6.91	20.79
1881	53	47	41	58	28	31	37	20	18	25	31	43	432	3.11	8.00	25.60
1882	77	54	60	40	45	44	29	23	33	22	39	36	502	3.79	8.97	23.60
1883	55	40	52	53	43	24	20	20	30	35	25	46	443	3.83	7.64	19.92
1884	54	61	62	46	55	46	34	24	21	27	33	86	549	4.40	8.71	19.80
1885	88	88	70	47	60	31	26	26	29	35	22	35	557	4.47	8.38	18.76
1886	58	71	122	129	62	53	29	25	29	39	51	62	730	5.33	10.37	19.43
1887	101	99	104	95	66	52	26	24	33	39	50	62	754	4.24	9.92	20.27
1888	144	101	104	89	50	50	39	36	38	43	34	95	823	5.22	10.24	19.65
1889	115	90	84	79	69	55	43	31	25	59	61	105	816	4.82	8.73	17.56
1890	232	148	109	162	88	55	33	43	43	75	71	130	1189	5.44	9.83	18.09
1891	181	152	291	274	105	72	48	45	36	71	102	118	1495	5.39	11.96	22.20
1892	198	196	172	121	105	63	46	70	62	67	82	121	1303	4.97	9.06	18.23
1893	186	189	159	177	131	90	55	54	57	59	103	135	1395	5.11	8.72	16.92
1894	89	74	87	171	154	109	46	52	62	92	82	167	1185	4.96	7.56	15.24

all

from all causes per 1000 of population.
1.30
0.70
8.90
0.51
5.80
6.26
2.50
2.20
1.10
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Deaths

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DIPHTHERIA.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes—Deaths per 10 000 of population—Annual death rates from all causes—For the years 1859 to 1894 inclusive.

YEARS.	MONTHS.													DIPHTHERIA MORTALITY.		Annual death rates from all causes per 1000 of population.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Percentages of total mortality.	Per 10 000 of population.	
1859........	....	....	....	....	....	....	....	1	....	....	....	....	1	0.05	0.11	21.30
1860........	4	6	26	3	1	5	21	10	10	16	22	30	154	6.81	14.09	20.70
1861........	29	16	17	12	9	4	4	2	1	2	9	7	112	4.91	9.33	18.90
1862........	6	5	8	3	3	8	2	8	14	7	2	8	74	2.61	5.40	20.51
1863.... ...	9	5	10	11	9	10	8	2	13	22	17	21	137	3.53	9.13	25.80
1864........	16	13	19	17	6	3	3	5	8	10	7	8	115	2.59	6.79	26.26
1865........	4	4	15	4	1	4	7	9	11	36	48	26	169	4.61	9.47	22.50
1866........	31	11	14	5	6	4	6	9	9	12	12	15	134	2.26	6.70	32.20
1867........	8	6	5	8	7	1	3	4	6	10	9	11	78	1.68	3.47	21.10
1868........	21	6	4	6	4	1	2	2	13	9	10	9	87	1.45	3.45	23.70
1869........	2	10	4	6	2	2	11	11	25	29	13	15	130	2.00	4.61	23.10
1870........	15	15	11	9	7	7	9	17	20	20	19	15	161	2.24	5.34	23.88
1871........	14	10	8	7	10	6	5	....	....	9	11	16	96	1 38	2.90	20.87
1872........	18	7	9	13	12	12	5	15	17	22	7	11	148	1.46	4.03	27.67
1873........	14	7	5	5	8	17	6	5	7	6	6	6	92	0.96	2.42	25.16
1874........	5	4	6	7	4	2	4	10	4	10	15	7	78	0.97	1.97	20.29
1875........	10	7	9	6	7	7	7	10	7	12	23	20	125	1.58	3.12	19.72
1876........	....	....	....	....	....	....	....	....	....	....	....	....	461	5.41	11.13	21.02
1877........	56	31	21	17	18	13	16	15	26	46	43	31	333	4.15	7.74	18.68
1878........	25	18	16	14	9	7	10	13	30	53	54	45	294	3.96	6.73	16.99
1879........	42	30	52	41	29	26	26	51	64	67	78	95	604	7.01	12.29	17.52
1880........	107	81	72	59	41	52	79	53	85	92	94	109	930	8 89	18.48	20.79
1881........	86	44	40	40	37	45	22	49	56	71	70	49	609	4.39	11.28	25.60
1882........	46	29	46	43	62	42	28	34	31	48	53	56	521	3.94	9.48	23.60
1883........	73	34	49	48	37	34	37	45	45	56	60	74	592	5.12	10.21	19.92
1884........	42	41	29	37	59	35	31	35	44	70	107	119	649	5.20	10.30	19.80
1885........	71	54	50	62	48	36	31	45	77	81	79	72	706	5.66	10.62	18.76
1886........	78	55	52	66	70	78	56	74	60	105	139	111	944	6.89	13.41	19.43
1887........	113	72	75	56	75	65	43	72	90	114	115	112	1002	6.50	13.18	20.27
1888........	96	70	63	55	62	62	40	48	70	89	105	98	858	5.44	10.68	19 65
1889........	109	82	104	91	70	85	54	72	77	132	125	125	1126	6.65	12.04	17 56
1890........	117	102	95	84	59	40	40	50	66	60	78	90	881	4.03	7.28	18.09
1891........	90	88	80	51	50	41	39	72	76	124	123	121	958	3.45	7.67	22.20
1892........	117	80	91	62	70	51	32	49	57	118	136	151	1014	3.87	7 05	18.23
1893........	113	95	110	67	76	71	58	55	57	88	84	101	975	3.60	6.09	16.92
1894 [a.....	105	70	79	58	62	68	61	81	109	169	214	217	1293	5.41	8.24	15.24

a] Including 80 per cent. of 565 deaths reported as from "*Croup.*"

CROUP.

Deaths as reported by months—Total by years—Percentages of the mortality from all causes—Deaths per 10 000 of population—Annual death rates from all causes—For the years 1851 to 1894 inclusive.

YEARS.	MONTHS.													CROUP MORTALITY.		Annual death rates from all causes per 1000 of population.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Percentages of deaths under 5 yrs.	Percentages of total deaths.	
1851	....	....	....	....	....	1	....	2	5	1	1	7	12	3.31	1.29	36.60
1852	3	3	1	4	2	5	1	1	....	5	3	3	31	5.52	1.71	46.70
1853	3	3	1	1	....	3	4	8	1	3	2	1	30	5.11	2.26	22.40
1854	3	5	11	14	3	4	1	....	....	6	4	3	54	4.21	1.30	64.00
1855	10	9	4	2	1	3	1	1	6	6	2	4	49	5.54	2.24	27.20
1856	5	....	....	....	1	1	....	....	3	4	8	7	29	2.90	1.39	24.88
1857	2	3	17	39	11	19	14	12	10	9	18	8	162	12.75	6.71	27.55
1858	26	29	18	13	5	18	1	22	24	12	10	10	188	16.00	8.44	24.72
1859	11	6	7	13	12	13	5	9	19	18	20	28	161	15.48	8.01	21.30
1860	12	22	8	6	3	10	5	12	16	10	10	11	125	10.88	5.52	20.70
1861	14	7	18	6	7	6	6	13	10	....	15	22	124	10.91	5.44	18.90
1862	....	27	10	17	3	7	13	4	8	4	7	1	101	7.12	3.56	20.51
1863	24	9	22	19	9	14	16	13	12	13	8	18	177	9.89	4.55	25.80
1864	20	14	12	12	15	17	22	5	17	18	14	14	180	8.64	4.04	26.26
1865	18	19	23	12	17	14	3	8	14	40	40	43	251	12.99	6.85	22.50
1866	29	18	12	16	9	9	15	9	6	8	11	7	149	5.13	2.51	32.20
1867	11	8	8	10	3	2	....	....	2	11	19	24	98	3.92	2.10	21.10
1868	9	12	11	6	6	9	3	6	11	18	10	13	114	4.50	1.90	23.70
1869	13	5	5	6	5	2	5	10	13	28	18	30	140	4.77	2.15	23.10
1870	27	20	16	7	9	12	5	10	21	50	46	27	250	5.43	3.41	23.88
1871	27	18	15	9	8	4	6	....	....	22	16	14	139	3.38	1.99	20.87
1872	14	10	14	9	7	8	7	12	24	28	29	42	204	3.45	2.00	27.67
1873	19	7	20	14	10	5	5	2	13	15	14	9	133	2.34	1.39	25.16
1874	17	4	9	1	8	4	3	1	5	11	9	17	89	1.81	1.10	20.29
1875	11	9	7	13	11	6	14	4	8	9	21	26	139	2.93	1.75	19.72
1876	....	....	....	....	....	....	....	....	....	....	....	....	276	5.64	3.21	21.02
1877	30	23	12	19	16	4	4	12	17	36	31	32	236	5.23	2.94	18.68
1878	18	24	11	20	7	7	1	4	21	44	35	32	224	5.57	3.01	16.99
1879	26	14	22	15	15	8	8	26	28	57	62	83	364	8.19	4.22	17.52
1880	49	46	44	41	34	27	11	24	37	73	82	65	533	9.45	5.09	20.79
1881	57	41	30	25	36	21	16	20	30	43	39	42	400	5.42	2.88	25.60
1882	24	32	37	16	26	11	8	8	11	16	22	21	232	3.49	1.75	23.60
1883	31	19	17	17	15	15	7	6	17	25	28	28	225	3.82	1.08	19.92
1884	24	10	24	11	13	10	12	12	9	34	57	40	256	3.84	2.05	19.80
1885	42	22	19	32	15	13	13	15	26	30	39	40	306	4.94	2.45	18.76
1886	36	22	28	24	26	8	10	18	32	46	68	41	359	5.30	2.62	19.43
1887	46	41	38	35	28	20	2	19	35	50	50	39	403	5.32	2.61	20.27
1888	78	51	56	52	25	21	19	17	28	32	31	29	439	5.82	2.78	19.65
1889	29	25	31	18	31	16	11	18	27	67	62	48	383	4.66	2.85	17.56
1890	52	29	34	36	25	13	12	17	35	32	46	49	380	3.81	1.73	18.09
1891	43	29	38	24	38	25	19	21	31	30	59	43	400	3.12	1.44	22.20
1892	44	44	50	40	32	9	11	28	53	74	74	75	534	4.57	2.03	18.23
1893	77	37	33	42	38	23	16	34	35	59	55	43	492	3.97	1.81	16.92
1894 [a	8	6	8	6	4	6	5	7	8	16	18	21	113	1.02	0.48	15.24

a] Eighty per cent. of the deaths reported as from "*Croup*" in 1894 is deducted and has been added to deaths from *Diphtheria* in that year.

SCARLET FEVER.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes—Deaths per 10 000 of population—Annual death rates from all causes—For the years 1851 to 1894 inclusive.

YEARS.	MONTHS.													SCARLET FEVER MORTALITY.		Annual death rates from all causes per 1000 of population.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Percentages of total mortality.	Per 10 000 of population.	
1851	....	....	....	....	....	4	4	2	....	1	3	3	17	1.83	5.00	36.60
1852	....	....	4	7	5	2	1	2	4	3	5	11	46	2.54	11.89	46.70
1853	6	9	11	2	1	....	....	3	2	....	1	1	36	2.72	6.10	22.40
1854	2	1	2	....	1	4	1	1	4	....	1	7	24	0.57	3.64	64.00
1855	1	3	1	....	....	....	....	....	....	....	....	....	5	0.23	0.62	27.20
1856	....	4	....	1	1	....	....	1	....	1	3	4	15	0.72	1.79	24.80
1857	2	19	9	11	7	7	5	....	2	5	3	5	75	3.11	8.56	27.55
1858	4	4	21	22	34	16	23	23	11	7	30	38	233	10.47	25.90	24.72
1859	29	40	45	24	10	15	11	6	16	31	8	15	253	12.60	27.20	21.30
1860	22	11	19	15	19	5	7	8	7	5	3	4	125	5.52	11.47	20.70
1861	1	3	....	....	....	1	3	2	3	2	6	24	45	1.97	3.75	18.90
1862	6	13	17	11	16	22	43	16	35	45	48	63	335	11.82	24.45	20.51
1863	107	60	54	50	25	15	28	10	26	12	9	9	405	10.42	27.00	25.80
1864	7	8	5	8	5	7	4	4	1	3	5	13	70	1.57	4.14	26.26
1865	8	8	10	6	8	3	6	11	12	7	2	8	89	2.43	4.99	22.50
1866	6	12	12	6	7	14	14	17	12	8	6	13	127	2.14	6.35	32.20
1867	21	14	10	9	7	8	1	8	3	3	3	14	101	2.17	4.49	21.10
1868	7	5	7	3	13	8	12	17	10	27	35	38	182	3.04	7.22	23.70
1869	47	43	28	46	28	51	70	56	30	48	66	60	573	8.83	20.46	23.10
1870	57	39	38	30	27	37	20	19	7	11	10	10	305	4.17	9.95	23.88
1871	14	9	9	7	11	7	9	....	....	16	17	25	124	1.78	3.70	20.87
1872	18	13	11	13	12	6	9	8	4	8	5	21	128	1.26	3.48	27.67
1873	14	7	14	13	11	11	15	8	10	4	4	4	115	1.20	3.03	25.16
1874	7	2	4	5	6	14	12	11	16	6	12	10	105	1.30	2.66	20.29
1875	14	7	12	17	21	15	11	11	20	17	17	44	206	2.59	5.15	19.72
1876	....	....	....	....	....	....	....	....	....	....	....	....	811	9.46	19.93	21.02
1877	153	114	92	74	82	83	57	44	37	29	31	23	819	10.20	19.05	18.68
1878	16	11	7	8	11	6	2	13	11	15	14	19	133	1.79	3.04	16.99
1879	20	16	31	30	32	16	31	35	33	41	61	43	389	4.52	7.92	17.52
1880	50	37	28	26	27	30	27	30	32	24	13	15	339	3.25	6.74	20.79
1881	25	22	7	23	22	15	19	14	8	8	12	12	187	1.35	3.46	25.60
1882	30	18	11	14	12	11	2	14	4	18	37	29	200	1.51	3.57	23.60
1883	39	22	35	36	35	30	31	36	36	30	23	47	400	3.46	7.07	19.92
1884	42	26	13	18	19	23	22	48	36	39	34	34	354	2.48	5.62	19.80
1885	42	18	15	27	20	23	12	13	20	27	35	27	279	2.24	4.19	18.76
1886	22	29	19	20	19	25	13	21	6	15	14	17	220	1.61	3.12	19.43
1887	23	23	20	13	8	18	15	23	19	7	14	7	190	1.23	2.50	20.27
1888	16	15	10	14	20	16	18	6	17	18	14	20	184	1.17	2.29	19.65
1889	22	12	17	24	15	16	14	12	13	13	11	16	185	1.09	1.98	17.56
1890	17	19	38	12	15	15	7	9	14	11	13	23	193	0.88	1.61	18.09
1891	40	58	62	39	39	30	21	26	34	43	50	57	499	1.80	3.91	22.20
1892	64	46	42	42	35	22	18	17	18	21	27	30	382	1.46	2.65	18.23
1893	47	35	47	42	25	18	22	9	17	21	24	22	329	1.21	2.06	16.92
1894	30	23	16	18	13	16	17	19	5	8	10	15	190	0.80	1.21	15.24

MEASLES.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes.—Deaths per 10 000 of population—Annual death rates from all causes—For the years 1851 to 1894 inclusive.

YEARS.	MONTHS.													MEASLES MORTALITY.		Annual death rates from all causes per 1000 of population
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Percentages of total mortality.	Per 10 000 of population.	
1851........	....	....	....	....	....	....	1	....	....	....	....	1	2	0.22	0.60	36.60
1852........	2	....	1	2	1	2	6	2	1	....	....	....	17	0.94	4.65	46.70
1853........	....	....	....	1	1	8	6	8	....	2	2	....	31	2.34	5.25	22.40
1854........	5	1	1	1	3	15	7	9	4	....	....	....	46	1.00	7.00	64.00
1855........	2	....	2	....	1	1	2	....	....	1	....	....	9	0.41	1.12	27.20
1856........	....	....	....	....	3	....	6	1	1	....	....	5	16	0.77	1.90	24.80
1857........	....	3	....	....	5	7	17	3	4	....	....	....	39	1.62	4.45	27.55
1858........	....	....	....	2	1	4	4	7	1	....	3	....	22	0.99	2.44	24.72
1859........	....	....	....	....	3	2	4	1	....	....	....	....	10	0.50	1.08	21.30
1860........	....	....	....	1	1	1	6	4	....	....	1	1	15	0.66	1.37	20.70
1861........	....	....	3	5	2	2	3	4	....	....	....	7	26	1.14	2.17	18.90
1862........	9	4	....	5	4	3	7	3	1	....	1	1	38	1.34	2.77	20.51
1863........	....	2	2	7	3	2	....	....	....	2	4	6	28	0.99	1.87	25.80
1864........	6	2	21	24	31	24	17	6	1	....	....	....	135	3.03	7.99	26.26
1865........	....	2	1	8	2	1	5	1	....	....	....	....	20	0.54	1.12	22.50
1866........	....	....	2	4	7	18	68	47	14	6	1	....	166	2.80	8.30	32.20
1867........	....	....	1	1	3	8	12	17	10	4	8	24	88	1.89	3.91	21.10
1868........	21	24	21	7	5	11	7	2	3	1	2	3	107	1.79	4.25	23.70
1869........	1	1	....	1	9	33	37	18	3	3	1	2	109	1.69	3.90	23.10
1870........	5	9	27	11	12	17	4	4	....	....	....	3	95	1.29	3.09	23.88
1871........	7	6	18	24	41	39	19	....	....	....	1	1	156	2.23	4.67	20.87
1872........	....	2	2	4	6	3	7	2	1	2	3	5	37	0.36	1.00	27.67
1873........	9	5	10	22	16	24	11	7	....	1	....	....	105	1.09	2.76	25.16
1874........	1	....	....	....	2	4	4	2	1	....	1	....	15	0.18	0.38	20.29
1875........	5	13	19	19	26	18	11	4	....	1	....	1	117	1.48	2.92	19.72
1876........	....	....	....	....	....	....	....	....	....	....	....	....	15	0.17	0.36	21.02
1877........	....	1	3	1	9	7	19	9	2	....	2	6	59	0.73	1.37	18.68
1878........	4	10	8	5	1	1	1	3	1	1	....	1	36	0.48	0.82	16.99
1879........	....	....	....	1	....	1	5	8	2	2	11	21	51	0.50	1.03	17.52
1880........	16	20	32	21	13	3	7	6	2	1	3	2	129	1.23	2.56	20.79
1881........	4	....	3	9	24	12	16	18	5	3	8	8	110	0.79	2.03	25.60
1882........	8	20	35	43	75	36	11	10	1	2	3	....	244	1.91	4.35	23.60
1883........	1	3	4	3	8	8	5	2	2	....	3	5	44	0.38	0.68	19.92
1884........	3	2	6	24	56	85	61	48	12	1	10	11	319	2.55	5.06	19.80
1885........	9	8	3	10	9	9	16	7	1	1	....	3	76	0.61	1.14	18.76
1886........	5	5	3	1	8	19	25	16	10	7	8	19	126	0.91	1.78	19.43
1887........	43	43	59	61	43	42	32	5	1	2	5	2	341	2.21	4.48	20.27
1888........	3	4	2	10	12	18	27	17	8	7	15	28	151	0.95	1.88	19.65
1889........	41	23	32	30	33	14	12	12	1	1	....	5	204	1.20	2.18	17.56
1890........	3	....	2	1	5	6	6	4	2	5	12	21	67	0.31	0.55	18.09
1891........	33	30	39	13	37	22	23	15	3	3	11	6	265	0.96	2.12	22.20
1892........	9	2	11	14	16	7	22	14	5	13	22	50	185	0.71	1.29	18.23
1893........	36	34	30	33	43	16	12	4	5	8	8	5	234	0.86	1.46	16.92
1894........	10	9	26	23	20	20	20	17	8	7	4	18	182	0.76	1.16	15.24

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DIARRHEA.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes—Deaths per 10 000 of population—Annual death rates from all causes—For the years 1851 to 1894 inclusive.

YEARS.	MONTHS.													DIARRHEA MORTALITY.		Annual death rates from all causes per 1000 of population.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Percentages of total mortality.	Per 10000 of population	
1851	....	....	....	....	....	....	1	10	6	1	....	....	18	1.94	5.30	36.60
1852	....	....	....	....	....	1	4	15	12	12	2	5	51	2.82	13.18	46.70
1853	2	....	....	2	....	1	1	5	7	6	2	5	31	2.34	5.25	22.40
1854	....	....	6	2	7	7	54	41	63	20	10	....	210	4.98	31.97	64.00
1855	3	2	1	1	1	....	8	34	27	12	3	....	92	4.22	11.50	27.20
1856	....	....	1	....	1	6	22	23	14	....	....	....	67	3.21	7.99	24.80
1857	....	....	....	....	1	....	15	8	24	13	2	....	63	2.61	7.19	27.55
1858	....	....	....	....	....	....	5	10	2	....	....	....	17	0.76	1.89	24.72
1859	1	2	....	....	....	....	10	19	3	1	....	1	37	1.84	3.98	21.30
1860	....	....	....	....	....	1	20	11	4	....	1	....	37	1.63	3.39	20.70
1861	1	1	1	....	....	2	6	6	6	6	1	1	31	1.36	2.58	18.90
1862	....	....	....	....	1	1	31	7	4	....	....	....	44	1.53	3.21	20.51
1863	....	2	....	2	1	....	2	7	16	6	4	9	49	1.26	3.27	25.80
1864	3	4	1	1	3	....	5	19	23	7	6	5	77	1.73	4.56	26.26
1865	3	2	3	2	9	2	10	22	9	11	8	4	85	2.32	4.76	22.50
1866	1	5	3	2	....	3	21	38	21	21	5	5	125	2.11	6.25	32.20
1867	4	1	....	2	....	2	25	45	47	12	4	5	147	3.16	6.53	21.10
1868	3	1	4	1	6	13	34	60	44	13	3	2	184	3.08	7.30	23.70
1869	3	3	1	2	7	7	37	87	55	22	3	2	229	3.53	8.18	23.10
1870	2	....	1	3	4	37	92	66	33	19	2	1	260	3.55	8.47	23.88
1871	1	2	1	2	6	22	57	59	....	8	9	2	169	2.42	5.06	20.87
1872	....	3	2	8	3	15	67	101	37	16	5	5	262	2.58	7.13	27.67
1873	1	1	7	5	8	14	93	73	51	23	11	1	288	3.01	7.58	25.16
1874	....	....	3	1	2	7	67	77	39	17	4	3	223	2.76	5.64	20.29
1875	5	2	2	12	3	17	80	66	47	13	3	2	252	3.19	6.30	19.72
1876	....	....	....	....	....	....	....	....	....	....	....	....	160	1.87	3.92	21.02
1877	6	4	1	4	2	10	74	61	39	20	3	3	227	2.83	5.28	18 68
1878	3	1	2	1	6	4	57	46	23	8	1	1	153	2.06	3.50	16.99
1879	....	....	4	1	3	14	86	69	27	5	4	2	215	2.50	4.38	17.52
1880	5	3	1	2	2	15	55	24	21	12	5	2	147	1.41	2.92	20.79
1881	5	6	10	9	31	20	76	68	47	18	13	14	317	2.28	5.69	25.60
1882	9	5	5	9	9	15	44	61	51	22	6	6	242	1.83	4.32	23.60
1883	5	2	10	12	8	17	54	45	38	8	7	13	219	1.90	3.78	19.92
1884	3	7	5	14	12	22	57	54	41	20	5	4	244	1.96	3.87	19.80
1885	5	2	5	15	23	11	31	43	20	6	2	8	171	1.37	2.57	18.76
1886	6	8	6	8	3	9	34	27	15	10	2	2	130	0.95	1.85	19.43
1887	5	4	11	6	3	19	54	22	22	11	3	2	162	1.05	2.13	20.27
1888	2	3	4	11	6	7	37	45	19	10	3	1	148	0.94	1.84	19.65
1889	3	2	5	4	5	9	51	36	21	13	13	5	167	0.99	1.79	17.56
1890	14	19	15	6	5	7	64	49	45	13	5	3	245	1.12	2.01	18.09
1891	8	13	16	37	14	19	91	75	51	27	7	17	375	1.35	3.00	22.20
1892	19	5	3	11	10	9	47	49	35	21	9	5	223	0.85	1.55	18.23
1893	8	4	11	3	8	7	42	18	24	13	6	1	145	0.54	0.91	16.92
1894	6	1	5	8	5	13	37	18	21	13	7	2	136	0.57	0 87	15.24

DYSENTERY.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes—Deaths per 10 000 of population—Annual death rates from all causes—For the years 1851 to 1894 inclusive.

YEARS.	MONTHS.													DYSENTERY MORTALITY.		Annual death rates from all causes per 1000 of population.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Percentages of total mortality.	Per 10 000 of population.	
1851	....	....	....	....	....	....	4	9	7	1	1	....	22	2.37	6.47	36.60
1852	....	....	1	1	3	4	2	13	16	8	2	3	53	2.93	13.66	46.70
1853	....	....	....	2	....	....	7	13	13	12	6	1	54	4.08	9.15	22.40
1854	....	....	1	1	2	14	15	82	71	42	10	4	242	5.74	36.78	64.00
1855	....	1	2	1	1	....	31	56	41	11	4	2	150	6.88	18.75	27.20
1856	1	1	....	3	1	3	44	141	53	26	17	15	305	14.62	36.31	24.80
1857	23	2	6	....	3	2	91	170	109	24	17	18	465	19.26	53.08	27.55
1858	1	3	....	....	....	5	97	90	15	11	2	....	224	10.07	24.88	24.72
1859	1	1	....	3	5	3	15	50	25	6	....	1	110	5.48	11.83	21.30
1860	....	....	....	....	5	16	50	26	....	4	....	....	101	4.46	9.24	20.70
1861	1	....	....	2	5	4	25	7	9	2	1	1	57	2.50	4.75	18.90
1862	....	....	....	1	1	....	9	17	19	17	....	1	65	2.29	4.74	20.51
1863	2	2	1	2	....	....	11	6	12	5	1	2	44	1.13	2.93	25.80
1864	3	2	1	1	6	4	13	29	39	20	....	1	119	2.68	7.02	26.26
1865	2	....	2	....	1	....	21	25	19	9	4	2	85	2.32	4.76	22.50
1866	2	1	....	3	3	6	29	29	14	10	2	....	99	1.67	4.99	32.20
1867	....	1	....	....	2	1	11	24	20	13	5	2	79	1.70	3.51	21.10
1868	2	4	2	1	2	3	17	47	23	14	5	2	122	2.04	4.84	23.70
1869	1	3	2	2	3	7	21	38	38	16	5	1	137	2.13	4.89	23.10
1870	4	1	3	4	1	18	26	42	33	7	2	1	142	1.94	4.63	23.88
1871	....	2	1	3	8	17	33	43	....	7	8	3	125	1.79	3.74	20.87
1872	1	2	1	2	3	12	38	62	27	12	5	1	166	1.63	4.52	27.67
1873	1	6	1	4	7	6	36	61	31	10	3	....	166	1.74	4.37	25.16
1874	1	....	2	4	4	3	10	20	16	11	2	2	74	1.92	1.87	20.29
1875	1	2	2	5	2	5	28	30	14	5	2	....	96	1.22	2.39	19.72
1876	....	....	....	....	....	....	....	....	....	....	....	....	63	0.73	1.54	21.02
1877	1	3	3	3	1	3	18	9	17	5	3	4	70	0.87	1.62	18.68
1878	1	1	4	4	1	....	6	9	6	1	1	1	35	0.47	0.80	16.99
1879	....	....	3	1	3	6	10	17	8	4	....	1	53	0.62	1.07	17.52
1880	2	....	1	2	7	4	9	12	7	4	1	3	52	0.50	1.03	20.79
1881	1	3	1	3	3	6	16	8	15	2	4	1	63	0.45	1.17	25.60
1882	5	....	2	5	3	4	8	21	16	8	5	2	79	0.60	1.41	23.60
1883	1	1	3	4	1	6	20	16	12	9	1	2	76	0.66	1.31	19.92
1884	....	1	2	1	3	2	17	14	20	7	5	5	77	0.62	1.22	19.80
1885	1	1	1	1	6	4	22	8	8	4	1	1	58	0.46	0.87	18.76
1886	2	1	1	2	1	6	17	13	11	6	1	3	64	0.45	0.91	19.43
1887	2	3	3	8	1	8	36	33	17	7	2	1	121	0.79	1.58	20.27
1888	2	3	3	6	1	7	31	28	14	6	2	....	103	0.65	1.28	19.65
1889	2	2	2	4	4	5	33	38	21	10	6	6	133	0.79	1.42	17.56
1890	9	10	4	8	4	10	29	29	17	10	3	3	136	0.62	1.13	18.09
1891	3	5	7	32	11	1	11	7	10	3	6	4	100	0.36	0.80	22.20
1892	6	5	1	2	4	2	8	11	6	4	2	3	54	0.21	0.37	18.23
1893	2	2	....	1	2	1	15	15	16	9	1	3	67	0.25	0.42	16.92
1894	3	3	3	4	5	4	27	5	6	3	1	....	64	0.26	0.40	15.24

TYPHOID FEVER.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes—Deaths per 10 000 of population—Annual death rates from all causes—For the years 1851 to 1894 inclusive.

YEARS.	MONTHS.													TYPHOID FEVER MORTALITY.		Annual death rates from all causes per 1000 of population.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Percentages of total mortality.	Per 10 000 of population.	
1851	....	....	....	....	....	1	....	3	1	4	....	1	10	1.08	2.94	36.60
1852	3	1	2	2	1	....	4	5	5	15	6	4	48	2.65	12.37	46.70
1853	....	2	3	3	1	1	4	1	6	3	1	10	35	2.64	5.92	22.40
1854	3	2	....	3	3	10	14	15	19	3	9	5	86	2.04	13.05	64.00
1855	2	2	2	....	....	2	5	1	10	7	4	8	43	1.97	5.37	27.20
1856	2	2	....	2	2	4	....	9	16	13	14	2	66	3.16	7.85	24.80
1857	1	3	4	4	8	2	4	8	17	11	13	7	82	3.40	9.36	27.55
1858	7	5	4	6	6	4	1	2	7	4	1	2	49	2.20	5.44	24.72
1859	2	1	8	2	4	2	1	3	9	9	3	7	51	2.54	4.40	21.30
1860	3	2	3	6	....	....	2	6	3	15	3	3	46	2.08	4.22	20.70
1861	5	4	5	6	9	4	8	7	2	8	7	9	74	3.25	6.16	18.90
1862	6	5	2	3	4	3	8	9	13	11	15	6	85	3.00	6.20	20.51
1863	14	35	12	7	6	6	4	5	25	10	10	15	149	3.58	9.93	25.80
1864	24	18	24	9	9	10	5	18	23	21	14	17	192	4.54	11.33	26.26
1865	13	8	14	16	9	7	15	17	20	25	26	20	190	5.19	10.67	22.50
1866	21	12	9	9	12	13	18	14	35	38	18	4	203	3.42	10.25	32.20
1867	11	10	5	15	5	15	9	13	18	25	26	13	165	3.55	7.33	21.10
1868	14	7	11	7	5	8	10	29	32	37	21	19	200	3.34	7.93	23.70
1869	6	7	7	7	12	12	17	17	22	38	29	9	183	2.82	6.53	23.10
1870	6	8	16	8	8	10	14	38	58	49	35	18	268	3.66	8.74	23.88
1871	8	7	8	9	10	....	12	....	....	18	75	57	204	2.92	6.10	20.87
1872	19	11	13	12	19	10	17	94	140	107	49	33	524	5.16	14.27	27.67
1873	17	8	6	11	12	13	12	31	52	55	38	17	272	2.85	7.15	25.16
1874	13	11	11	11	5	7	10	28	33	36	25	21	211	2.61	5.34	20.29
1875	11	8	10	10	9	4	12	19	46	44	17	17	207	2.62	5.16	19.72
1876	....	....	....	....	....	....	....	....	....	....	....	....	168	1.96	4.12	21.02
1877	7	9	11	2	5	7	19	16	30	25	20	8	159	1.98	3.69	18.68
1878	6	10	9	9	6	6	17	16	25	17	15	10	146	1.97	3.34	16.99
1879	12	13	11	7	11	14	8	33	33	30	17	19	208	2.41	4.23	17.52
1880	7	10	8	11	8	10	11	22	26	31	14	13	171	1.63	3.39	20.79
1881	13	15	13	10	29	24	23	98	94	123	73	53	568	4.09	10.51	25.60
1882	62	39	25	15	26	16	26	52	59	66	38	38	462	3.49	8.25	23.60
1883	22	13	17	16	13	17	23	50	44	41	45	60	361	3.12	6.22	19.92
1884	42	26	13	18	19	23	22	48	36	39	34	34	354	2.84	5.61	19.80
1885	33	14	17	21	38	32	79	67	91	33	39	32	496	3.98	7.45	18.76
1886	19	23	35	45	37	30	36	57	54	66	52	29	483	3.53	6.86	19.43
1887	26	24	41	35	23	13	35	48	41	40	38	18	382	2.48	5.02	20.27
1888	21	20	9	19	19	16	32	50	60	46	40	43	375	2.35	4.67	19.65
1889	30	21	15	12	16	18	29	64	77	68	68	35	453	2.67	4.84	17.56
1890	53	136	103	45	82	107	86	115	95	72	67	47	1008	4.60	8.33	18.09
1891	67	61	71	136	408	167	200	182	198	171	150	186	1997	7.20	15.97	22.20
1892	311	187	76	56	70	55	211	179	138	92	67	47	1489	5.67	10.35	18.23
1893	41	30	41	58	56	60	55	76	86	81	43	43	670	2.47	4.18	16.92
1894	46	26	27	30	31	31	37	52	71	68	38	34	491	2.05	3.14	15.24

ASIATIC CHOLERA.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes—Deaths per 10 000 of population—Annual death rates from all causes—For the years of its occurrence, 1851 to 1873 inclusive.

YEARS.	MONTHS.													ASIATIC CHOLERA MORTALITY.		Annual death rates from all causes per 1000 of population.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Percentages of total mortality.	Per 10 000 of population	
1851	....	....	....	....	....	2	21	122	67	4	....	....	216	23.30	63.53	36.60
1852	....	....	....	....	7	21	95	235	193	70	9	....	630	34.83	165.79	46.70
1853	....	....	....	....	....	....	1	....	....	....	....	....	1	....	....	22.40
1854	....	....	....	....	46	170	581	254	174	159	40	....	1424	33.77	219.00	64.00
1855	....	....	....	....	2	....	34	66	44	1	....	....	147	6.74	18.37	27.20
1863	....	....	....	....	....	....	....	3	1	....	....	....	4	0.10	0.26	25.80
1864	....	....	....	....	....	....	1	....	....	....	....	....	1	....	....	26.26
1866	....	....	....	....	....	....	....	139	166	673	12	....	990	16.69	49.50	32.20
1867	....	....	....	....	....	....	3	5	1	1	....	....	10	0.21	0.44	21.10
1873	....	....	....	....	1	4	22	40	13	....	....	....	80	0.42	1.05	25.16

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CANCER.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes—Deaths per 10 000 of population—Annual death rates from all causes—For the years 1851 to 1894 inclusive.

YEARS.	MONTHS.													CANCER MORTALITY.		Annual death rates from all causes per 1000 of population.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Percentages of total mortality.	Per 10 000 of population.	
1851	....	....	....	....	....	....	1	....	....	....	....	....	1	0.11	0.30	36.60
1852	1	....	....	....	....	....	....	1	....	....	....	....	2	0.11	0.51	46.70
1853	....	1	....	....	....	1	2	....	....	....	....	....	4	0.30	0.68	22.40
1854	....	....	....	....	....	....	....	1	....	3	1	....	5	0.12	0.76	64.00
1855	....	....	1	....	....	....	1	1	....	....	....	....	3	0.14	0.38	27.20
1856	....	....	1	....	....	1	....	....	....	....	....	....	2	0.10	0.24	24.80
1857	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	27.55
1858	1	1	1	....	....	....	....	....	1	....	....	....	4	0.18	0.44	24.72
1859	1	....	....	2	....	....	....	....	....	....	1	1	5	0.25	0.54	21.30
1860	....	....	1	....	....	....	1	2	..	....	....	1	5	0.22	0.46	20.70
1861	....	....	....	....	....	1	1	....	....	1	2	2	7	0.31	0.58	18.90
1862	1	....	....	....	....	....	....	....	....	....	2	....	3	0.11	0.22	20.51
1863	....	....	3	....	....	....	....	2	1	3	....	....	9	0.23	0.60	25.80
1864	3	1	....	1	1	....	....	2	....	2	....	1	11	0.25	0.64	26.26
1865	....	1	1	2	2	....	4	1	1	....	3	1	16	0.44	0.89	22.50
1866	1	5	2	2	3	3	3	3	4	2	6	2	36	0.61	1.80	32.20
1867	2	3	2	2	3	3	3	5	4	7	7	4	45	0.97	2.00	21.10
1868	6	5	8	9	5	8	2	7	12	5	10	5	82	1.37	3.25	23.70
1869	8	6	6	2	7	4	4	4	7	6	2	7	63	0.97	2.25	23.10
1870	4	4	5	8	7	9	12	10	6	7	6	9	87	1.19	2.83	23.88
1871	5	7	5	6	5	7	5	15	....	4	5	4	68	0.97	2.04	20.87
1872	7	6	3	7	3	7	11	10	5	5	5	6	75	0.74	2.04	27.67
1873	6	11	6	12	6	12	11	10	9	11	5	8	107	1.12	2.82	25.16
1874	6	7	12	4	12	6	16	10	6	7	15	8	100	1.35	2.76	20.29
1875	10	7	9	6	13	11	15	14	11	10	7	9	122	1.54	3.07	19.72
1876	....	....	....	....	....	....	....	....	....	....	....	....	122	1.42	2.99	21.02
1877	6	11	17	8	11	14	8	13	5	16	14	7	130	1.62	3.02	18.68
1878	10	9	19	10	9	17	18	26	20	16	13	10	177	2.38	4.05	16.99
1879	13	7	14	15	16	20	15	23	20	10	11	13	177	2.05	3.57	17.52
1880	10	10	15	19	16	8	16	12	9	12	18	18	163	1.56	3.24	20.79
1881	22	12	17	14	13	12	20	37	18	14	18	20	217	1.56	4.02	25.60
1882	19	11	28	8	21	20	25	30	23	11	14	10	220	1.66	3.95	23.60
1883	18	17	16	19	18	19	23	23	21	24	18	16	232	2.01	4.00	19.92
1884	15	25	27	20	18	16	30	27	21	19	27	20	265	2.12	4.21	19.80
1885	30	18	20	22	23	17	26	16	14	18	21	21	249	2.00	3.74	18.76
1886	14	8	12	21	15	21	21	26	27	22	18	25	230	1.68	3.27	19.43
1887	21	24	27	18	22	21	37	33	22	21	27	28	301	1.95	3.96	20.27
1888	30	19	26	31	35	35	31	31	28	33	30	32	361	2.29	4.49	19.65
1889	29	20	36	17	35	27	35	26	37	35	41	41	379	2.24	4.05	17.56
1890	39	32	33	38	40	37	40	45	46	38	36	37	461	2.11	3.81	18.09
1891	37	52	43	42	38	42	38	58	39	55	45	56	545	1.96	4.36	22.20
1892	63	43	41	42	56	42	39	47	40	41	44	41	539	2.06	3.75	18.23
1893	51	51	46	55	42	42	54	61	59	51	47	50	609	2.25	3.81	16.92
1894	47	35	38	54	57	49	56	61	63	59	52	68	639	2.67	4.07	15.24

NERVOUS DISEASES, HEART DISEASES, BRIGHT'S DISEASE, CHILD MORTALITY.

Deaths from diseases of the nervous system, from diseases of the heart and from chronic nephritis—Deaths of infants and children under 5 years of age—Total deaths by years—Deaths per 10 000 of population—Annual death rates from all causes—For the years 1851 to 1894 inclusive.

YEARS.	DEATHS FROM NERVOUS DISEASES.		DEATHS FROM HEART DISEASES.		DEATHS FROM BRIGHT'S DISEASE. [a		DEATHS OF CHILDREN UNDER 5 YEARS OF AGE.		Annual death rates from all causes per 1000 of population.
	Total deaths.	Deaths per 10 000 of population.	Total deaths.	Deaths per 10 000 of population.	Total deaths.	Deaths per 10 000 of population.	Total deaths.	Deaths per 10 000 of population.	
1851	38	11.18	3	0.88	......	......	362	106.47	36.60
1852	74	19.12	3	0.77	......	......	561	143.87	46.70
1853	96	16.27	5	0.85	......	......	585	99.15	22.40
1854	128	19.40	5	2.27	......	......	1256	190.30	64.00
1855	110	13.75	19	2.37	......	......	883	110.38	27.20
1856	110	13.07	7	0.83	......	......	999	118.93	24.80
1857	124	14.16	12	1.37	......	......	1270	144.97	27.55
1858	124	13.78	17	1.90	......	......	1175	130.55	24.72
1859	136	14.62	17	1.83	......	......	1040	111.83	21.30
1860	182	16.70	22	2.02	......	......	1148	105.32	20.70
1861	173	14.42	32	2.67	......	......	1136	94.66	18.90
1862	203	14.71	26	1.90	......	......	1418	102.75	20.51
1863	264	17.60	32	2.13	......	......	1718	119.20	25.80
1864	391	23.31	52	3.08	......	......	2081	122.41	26.26
1865	503	28.26	39	2.18	......	......	1932	108.54	22.50
1866	571	28.55	61	3.05	......	......	2899	144.95	32.20
1867	635	28.22	64	2.84	......	......	2498	111.02	21.10
1868	933	37.02	104	4.13	15	0.60	2530	140.40	23.70
1869	936	33.43	119	4.25	29	1.04	2934	104.80	23.10
1870	1152	37.65	133	4.35	28	0.91	4600	150.33	23.88
1871	1007	30.15	128	3.83	25	0.75	4040	120.96	20.87
1872	1613	44.77	163	4.44	44	1.20	5901	160.80	27.67
1873	1673	46.50	174	4.58	46	1.20	5676	149.37	25.16
1874	1456	36.86	175	4.43	43	1.09	4896	123.95	20.29
1875	1388	34.70	209	5.22	48	1.20	4736	118.40	19.72
1876	1442	35.43	180	4.42	60	1.62	4891	119.87	21.02
1877	1312	30.51	179	4.16	61	1.42	4512	105.00	18.68
1878	1308	29.93	245	5.62	66	1.51	4017	91.70	16.99
1879	1400	28.92	264	5.38	81	1.65	4444	90.51	17.52
1880	1678	33.36	321	6.38	131	2.60	5640	112.13	20.79
1881	2131	39.52	335	6.20	102	1.90	7371	136.50	25.60
1882	1913	34.16	364	6.50	121	2.16	6645	118.73	23.60
1883	1798	31.00	421	7.26	143	2.47	5875	101.29	19.92
1884	1900	30.16	388	6.16	142	2.25	6666	105.81	19.80
1885	1874	28.18	460	6.92	127	1.91	6187	93.04	18.76
1886	2141	30.41	453	6.43	159	2.26	6763	96.06	19.43
1887	2510	33.03	549	7.22	174	2.29	7568	99.55	20.27
1888	2408	30.02	618	7.71	192	2.39	7533	93.93	19.65
1889	2570	27.49	674	7.21	194	2.07	8204	87.74	17.56
1890	3113	25.77	816	6.75	245	2.03	9954	82.40	18.09
1891	3843	30.74	929	7.43	229	1.83	12801	102.41	22.20
1892	3717	25.85	1058	7.36	249	1.73	11662	81.10	18.23
1893	3590	22.44	1067	6.67	257	1.61	12363	77.27	16.92
1894	2959	18.86	1071	6.83	344	2.19	11019	73.47	15.24

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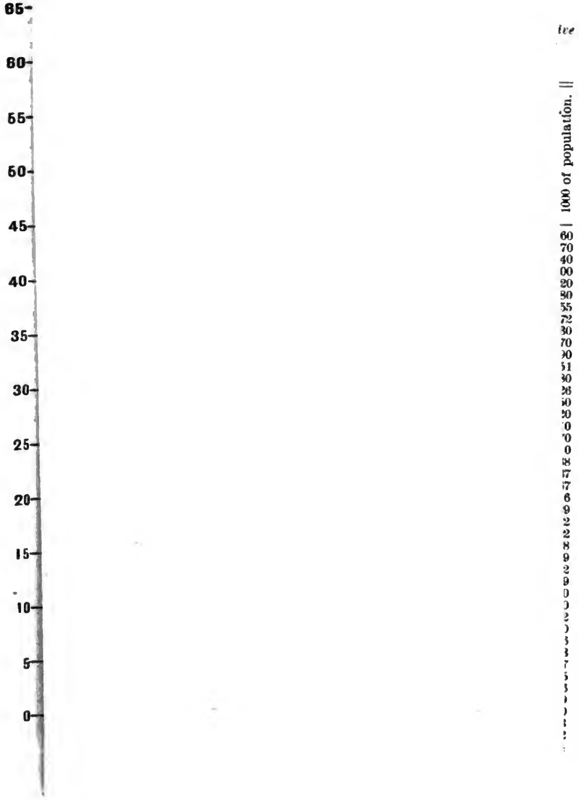
a] The first death from "*Bright's disease*" was reported in May, 1864; 2 more were reported in June, 1865; 1 in April, and 2 in May, 1866; and 1 each in July, August, October, November and December, 1867. Thereafter the deaths from this cause were reported in appreciable numbers.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CHOLERA INFANTUM.

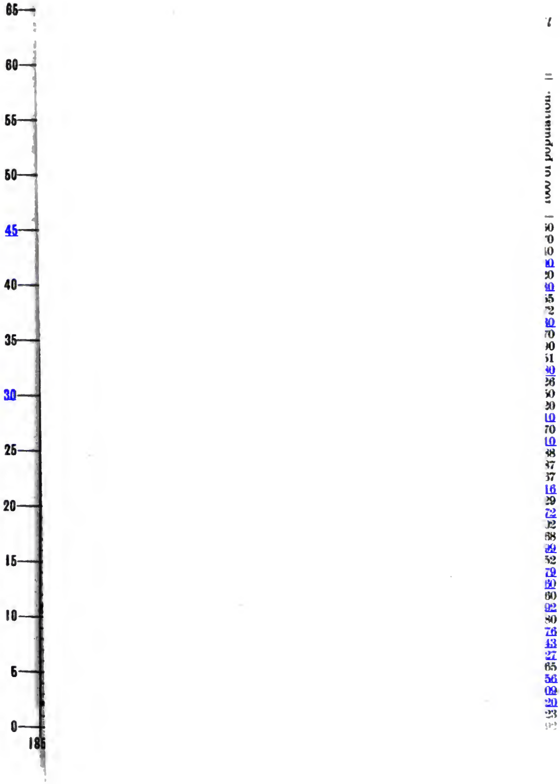
Deaths as reported by months—Totals by years—Percentages of the total mortality under five years of age—Percentages of the total mortality from all causes—Annual death rates from all causes—For the years 1851 to 1894 inclusive.

YEARS.	MONTHS.													CHOLERA INFANTUM MORTALITY.		Annual death rates from all causes per 1000 of population.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Percentage of deaths under 5 years.	Percentage of total deaths.	
1851	....	....	....	....	....	....	2	11	19	3	....	....	35	9.66	3.77	36.60
1852	....	....	....	1	....	....	7	22	12	2	1	....	45	8.04	2.48	46.70
1853	....	....	....	....	....	1	6	14	2	2	....	....	25	4.27	1.88	22.40
1854	....	....	....	....	....	2	20	22	18	7	....	....	69	5.49	1.63	64.00
1855	....	....	....	....	....	....	3	15	5	....	....	....	23	2.60	1.05	27.20
1856	....	....	....	....	....	....	5	11	2	1	....	....	19	1.90	0.91	24.80
1857	....	....	....	3	....	....	5	13	4	5	....	....	30	2.36	1.24	27.55
1858	....	....	....	....	....	....	16	36	14	2	....	....	68	5.78	3.05	24.72
1859	....	....	....	....	1	....	10	74	1	....	....	....	86	8.26	4.28	21.30
1860	....	....	1	....	....	....	21	62	18	8	5	3	118	10.27	5.21	20.70
1861	4	7	4	1	5	14	49	50	36	5	....	....	175	15.40	7.67	18.90
1862	....	....	....	....	....	9	12	89	57	6	1	1	175	12.34	6.17	20.51
1863	....	....	....	2	2	4	42	72	33	....	....	....	155	8.66	3.98	25.80
1864	....	1	....	1	2	5	112	199	67	13	1	....	401	19.26	9.01	26.26
1865	1	....	2	2	....	10	115	128	58	15	1	....	332	17.18	9.06	22.50
1866	....	....	2	....	1	4	194	242	95	47	6	1	592	20.42	9.98	32.20
1867	....	....	....	5	1	9	192	212	86	41	4	....	550	22.01	11.83	21.10
1868	....	....	1	....	1	9	288	280	145	17	2	1	742	29.32	12.39	23.70
1869	1	1	1	....	2	13	188	332	158	31	2	1	730	25.05	11.25	23.10
1870	1	1	....	....	6	146	353	277	99	30	2	1	916	19.91	12.50	23.88
1871	....	....	....	1	5	67	316	264	....	21	7	1	682	16.88	9.77	20.87
1872	1	2	1	6	10	146	549	530	187	36	1	....	1469	25.04	14.46	27.67
1873	1	....	....	1	4	44	475	438	237	52	7	1	1260	22.19	13.18	25.16
1874	1	....	1	1	4	68	594	406	210	35	5	1	1326	27.08	16.42	20.29
1875	1	....	1	14	7	33	412	278	149	16	2	1	914	19.29	11.57	19.72
1876	....	....	....	....	....	....	....	....	....	....	....	....	722	14.76	8.42	21.02
1877	....	1	....	8	6	23	246	163	60	13	....	1	530	11.74	6.60	18.68
1878	....	1	3	2	1	8	269	155	62	11	2	3	517	12.87	6.96	16.99
1879	1	....	1	4	1	70	252	154	33	7	1	1	525	11.81	6.09	17.52
1880	....	1	....	2	16	129	307	162	41	13	2	....	673	11.93	6.43	20.79
1881	1	3	3	12	70	73	441	369	111	19	5	3	1110	15.05	8.07	25.60
1882	3	2	2	7	4	35	279	322	149	29	10	....	842	12.67	6.36	23.60
1883	....	....	9	4	16	65	380	184	70	9	9	6	751	11.07	6.49	19.92
1884	....	3	4	23	26	57	398	214	118	43	9	4	899	13.48	7.20	19.80
1885	2	4	2	11	36	43	326	205	69	15	3	4	720	11.63	5.77	18.76
1886	5	1	6	12	16	77	285	201	106	28	8	5	750	11.08	5.47	19.43
1887	....	4	24	2	8	137	432	184	91	18	6	1	907	11.98	5.88	20.27
1888	2	4	3	13	5	34	399	278	106	20	8	2	874	11.60	5.53	19.65
1889	2	1	2	5	7	21	428	319	210	41	12	4	1052	12.70	6.20	17.56
1890	16	22	3	12	16	69	468	314	103	26	7	2	1058	10.62	4.83	18.09
1891	7	8	20	66	39	48	349	319	170	64	15	17	1122	8.76	4.04	22.20
1892	26	8	9	22	25	98	444	360	155	42	13	9	1211	10.38	4.61	18.23
1893	12	3	20	18	13	56	665	507	252	61	13	3	1623	13.12	5.99	16.92
1894	5	4	12	10	21	127	797	494	356	168	38	33	2065	18.74	8 64	15.24

WHOOPING COUGH.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes—Deaths per 10 000 of population—Annual death rates from all causes—For the years 1851 to 1894 inclusive.

YEARS.	MONTHS.													WHOOPING COUGH MORTALITY.		Annual death rates from all causes per 1000 of population.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Percentages of total mortality.	Per 10 000 of population.	
1851........	....	....	....	....	....	1	....	1	1	3	....	1	7	0.75	2.06	36.60
1852........	2	....	1	1	....	1	....	....	2	....	....	....	7	0.39	1.81	46.70
1853........	....	....	1	....	....	2	2	3	5	2	1	1	17	1.28	2.88	22.40
1854........	....	1	1	3	2	7	3	10	7	1	....	....	35	0.83	5.33	64.00
1855........	....	1	1	....	....	1	2	4	6	2	1	1	19	0.87	2.37	27.20
1856........	....	1	....	1	2	1	....	1	2	....	....	1	9	0.43	1.07	24.80
1857........	6	7	2	....	1	2	1	1	....	....	....	....	20	0.83	2.28	27.55
1858........	....	1	1	....	3	3	1	3	3	1	2	1	19	0.85	2.11	24.72
1859........	....	1	1	3	....	1	2	3	1	....	....	....	12	0.60	1.29	21.30
1860........	....	1	3	....	1	1	4	9	4	....	1	....	24	1.06	2.20	20.70
1861........	....	1	3	2	1	3	10	3	1	....	....	....	24	1.05	2.00	18.90
1862........	....	3	4	5	3	....	1	4	2	2	....	3	27	0.95	1.97	20.51
1863........	1	3	6	7	10	6	10	14	16	11	3	4	91	2.34	6.07	25.80
1864........	1	1	5	2	4	....	....	2	2	1	....	1	19	0.43	1.12	26.26
1865........	....	....	2	3	....	....	2	3	2	2	....	1	15	0.41	0.84	22.50
1866........	1	2	....	1	3	6	15	63	40	19	17	17	184	3.10	9.18	32.20
1867........	10	1	10	4	11	4	4	6	6	2	1	3	62	1.33	2.75	21.10
1868........	3	1	1	4	....	6	6	10	9	10	7	6	63	1.05	2.50	23.70
1869........	10	10	13	10	13	9	13	25	7	13	5	3	131	2.02	4.68	23.10
1870........	4	11	12	6	9	4	13	14	7	5	2	4	91	1.24	2.96	23.88
1871........	4	3	5	7	6	8	20	....	....	2	4	4	63	0.90	1.89	20.87
1872........	6	4	5	6	3	5	13	41	15	8	10	8	124	1.22	3.37	27.67
1873........	5	10	8	12	15	12	23	34	16	10	8	2	155	1.62	4.08	25.16
1874........	5	4	6	7	11	13	17	71	14	4	4	1	107	1.33	2.71	20.29
1875........	1	2	4	2	4	4	11	21	19	8	13	17	106	1.34	2.64	19.72
1876........	....	....	....	....	....	....	....	....	....	....	....	....	133	1.55	3.26	21.02
1877........	....	1	1	3	7	4	6	11	4	6	2	7	52	0.65	1.20	18.68
1878........	9	14	19	30	32	21	35	28	19	19	5	4	235	3.14	5.38	16.90
1879........	....	3	6	....	4	1	4	5	6	....	1	3	33	0.38	0.67	17.52
1880........	4	4	10	2	8	6	8	7	7	3	3	6	68	0.65	1.35	20.79
1881........	2	8	6	11	17	14	15	32	22	10	8	12	157	1.13	2.91	25.60
1882........	6	7	7	9	12	9	15	11	10	8	6	1	101	0.76	1.80	23.60
1883........	7	5	10	6	7	9	10	16	12	5	2	3	92	0.80	1.58	19.92
1884........	4	5	6	11	9	10	10	11	13	11	11	11	112	0.90	1.78	19.80
1885........	7	6	8	6	12	6	14	13	3	8	6	5	94	0.75	1.41	18.76
1886........	7	10	10	11	13	4	11	15	18	3	6	4	112	0.82	1.59	19.43
1887........	4	2	8	4	7	3	14	19	14	10	11	8	104	0.68	1.37	20.27
1888........	21	16	23	22	12	15	21	16	17	9	6	5	183	1.16	2.27	19.65
1889........	7	4	9	5	6	8	5	12	18	7	4	11	96	0.57	1.03	17.56
1890........	26	18	11	8	12	11	26	31	14	10	15	19	201	0.92	1.67	18.09
1891........	16	24	24	15	29	13	20	11	12	11	11	8	194	0.70	1.55	22.20
1892........	13	15	13	11	11	14	17	23	18	10	10	9	164	0.63	1.14	18.23
1893........	12	5	16	19	18	22	18	38	30	13	10	9	210	0.78	1.31	16.92
1894........	16	10	11	14	23	15	24	35	38	8	11	5	210	0.88	1.34	15.24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SMALLPOX.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes—Deaths per 10 000 of population—Annual death rates from all causes—For the years 1851 to 1894 inclusive.

YEARS.	MONTHS.													SMALLPOX MORTALITY.		Annual death rates from all causes per 1000 of population.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Percentages of total mortality.	Per 10 000 of population.	
1851	....	....	....	....	....	....	....	1	....	....	1	....	2	......	......	36.60
1852	2	....	....	....	....	....	2	4	....	1	....	....	9	0.40	2.33	46.70
1853	2	2	1	2	2	4	....	1	....	1	1	3	19	1.43	3.21	22.40
1854	1	1	1	2	2	....	2	....	....	....	1	2	12	0.28	1.82	64.00
1855	8	6	2	5	1	1	2	1	....	....	1	3	30	1.37	3.75	27.20
1856	5	2	2	4	2	1	....	....	....	....	....	....	16	0.76	1.90	24.80
1857	1	....	....	3	1	2	....	2	....	....	1	....	10	0.41	1.14	27.55
1858	1	....	....	1	1	2	....	....	....	....	....	....	5	......	......	24.72
1859	....	....	....	....	....	....	....	....	....	....	....	....	....	......	......	21.30
1860	....	....	....	....	....	1	1	....	....	1	....	....	3	......	......	20.70
1861	1	1	....	....	....	....	....	....	1	....	2	....	5	......	......	18.90
1862	1	1	....	....	....	....	....	....	....	....	....	3	5	......	......	20.51
1863	4	9	8	9	7	11	4	4	7	10	16	26	115	2.96	7.66	25.80
1864	55	40	37	35	32	19	25	8	6	3	11	12	283	6.36	16.74	26.26
1865	8	18	17	4	5	3	....	1	1	....	....	....	57	1.55	3.20	22.50
1866	2	....	....	....	1	....	2	1	1	....	....	2	9	......	......	32.20
1867	1	5	3	8	3	4	8	11	13	20	19	28	123	2.64	5.46	21.10
1868	39	33	35	12	13	10	2	....	....	....	....	2	146	2.60	5.79	23.70
1869	1	1	2	2	3	2	2	1	3	....	....	....	17	0.26	0.60	23.10
1870	1	1	....	3	2	5	2	1	....	....	....	....	15	0.20	0.48	23.88
1871	2	2	....	1	1	3	3	....	....	1	13	47	73	1.04	2.19	20.87
1872	65	54	97	80	68	60	26	29	20	27	63	66	655	6.45	17.80	27.67
1873	64	53	35	44	56	45	52	31	33	32	36	36	517	5.40	13.61	25.16
1874	24	11	8	17	14	7	7	1	1	....	....	....	90	1.11	2.27	20.29
1875	....	2	3	3	1	1	....	....	....	....	....	....	10	0.12	0.25	19.72
1876	....	....	....	....	....	....	....	....	....	....	....	....	29	0.33	0.71	21.02
1877	....	....	1	3	2	2	4	7	7	4	5	8	43	0.53	1.00	18.68
1878	7	5	2	4	....	....	3	....	....	....	....	....	21	0.28	0.48	16.89
1879	....	....	....	....	....	....	....	....	....	....	....	1	1	......	......	17.52
1880	....	....	....	9	4	10	3	1	2	3	1	10	43	0.41	0.85	20.79
1881	29	34	31	39	60	37	50	116	116	188	206	274	1180	8.50	21.85	25.60
1882	345	281	262	150	111	49	24	4	5	21	19	21	1292	9.79	23.07	23.60
1883	13	10	9	7	4	3	....	....	....	....	....	....	46	0.40	0.79	19.82
1884	....	....	....	2	....	....	....	....	....	....	....	....	2	......	......	19.80
1885	....	2	1	....	....	....	....	....	....	1	1	3	8	......	......	18.76
1886	2	....	....	....	....	....	....	....	....	....	....	....	2	......	......	19.43
1887	....	....	....	....	....	2	....	....	....	....	....	....	2	......	......	20.27
1888	....	....	....	....	....	....	....	....	....	....	....	....	....	......	......	19.65
1889	....	....	....	....	1	1	....	....	....	....	....	....	2	......	......	17.56
1890	....	....	....	....	....	....	....	....	....	....	....	....	....	......	......	18.09
1891	....	....	....	....	....	....	....	....	....	....	....	....	....	......	......	22.20
1892	....	....	....	....	1	1	....	....	....	....	....	....	2	......	......	18.23
1893	....	1	....	....	....	1	....	1	1	4	2	13	23	0.08	0.14	16.92
1894	29	55	100	157	253	171	51	53	31	40	51	42	1033	1.32	6.58	15.24

TYPHUS FEVER.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes—Deaths per 10 000 of population—Annual death rates from all causes—For the years 1851 to 1886 inclusive.

YEARS.	MONTHS.													TYPHUS FEVER MORTALITY.		Annual death rates from all causes per 1000 of population.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Percentages of total mortality.	Per 10 000 of population.	
1851	....	....	....	....	....	....	....	2	....	....	1	1	4	0.43	1.18	36.60
1852	....	....	....	....	1	3	1	2	2	....	1	1	11	0.61	2.84	46.70
1853	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	22.40
1854	....	....	....	1	....	1	2	6	6	3	3	....	22	0.52	3.34	64.00
1855	....	....	....	....	....	....	....	1	4	2	....	....	7	0.32	0.87	27.20
1856	....	2	....	....	2	....	1	3	4	10	1	3	26	1.25	3.10	24.80
1857	3	3	4	....	1	3	3	1	3	5	....	4	30	1.24	3.42	27.55
1858	2	2	....	....	....	....	....	1	....	....	1	....	6	0.27	0.66	24.72
1859	....	....	....	....	....	1	....	1	2	1	1	....	6	0.29	0.64	21.30
1860	....	....	....	....	1	1	1	....	....	....	....	....	3	0.13	0.27	20.70
1861	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	18.90
1862	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	20.51
1863	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	25.80
1864	1	6	6	1	....	....	....	....	6	5	2	....	27	0.61	1.60	26.26
1865	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	22.50
1866	....	....	3	2	1	....	1	1	....	1	....	1	10	0.18	0.50	32.20
1867	1	....	2	1	3	3	2	6	4	3	5	2	32	0.69	1.42	21.10
1868	....	....	2	1	1	1	....	....	1	....	....	....	6	0.10	0.24	23.70
1869	....	....	....	....	....	2	1	2	1	....	....	....	6	0.09	0.21	23.10
1870	....	....	....	....	....	....	....	2	1	....	....	....	3	0.04	0.10	23.88
1871	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	20.87
1872	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	27.67
1873	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	25.16
1874	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	20.29
1875	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	19.72
1876	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	21.02
1877	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	18.68
1878	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	16.99
1879	....	....	....	....	....	....	....	....	....	....	....	1	1	0.01	0.02	17.52
1880	1	4	1	....	2	1	1	1	....	....	....	....	11	0.11	0.22	20.79
1881	1	1	1	....	1	....	....	1	5	2	2	2	16	0.12	0.30	25.60
1882	2	....	....	....	....	2	....	....	1	....	....	....	5	0.04	0.09	23.60
1883	....	....	1	....	....	....	....	....	1	....	....	....	2	0.02	0.03	19.92
1884	1	....	....	....	....	1	....	....	....	1	....	....	3	0.03	0.05	19.80
1885	....	....	....	....	....	....	....	2	3	1	1	....	7	0.06	0.11	18.76
1886	1	1	1	1	....	....	....	....	....	....	....	....	4	0.03	0.03	19.43

NOTE.—There has been no death reported from *Typhus fever* since April, 1886.

PUERPERAL FEVER.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes—Deaths per 1000 confinements [a—Annual death rates from all causes—For the years 1851 to 1894 inclusive.

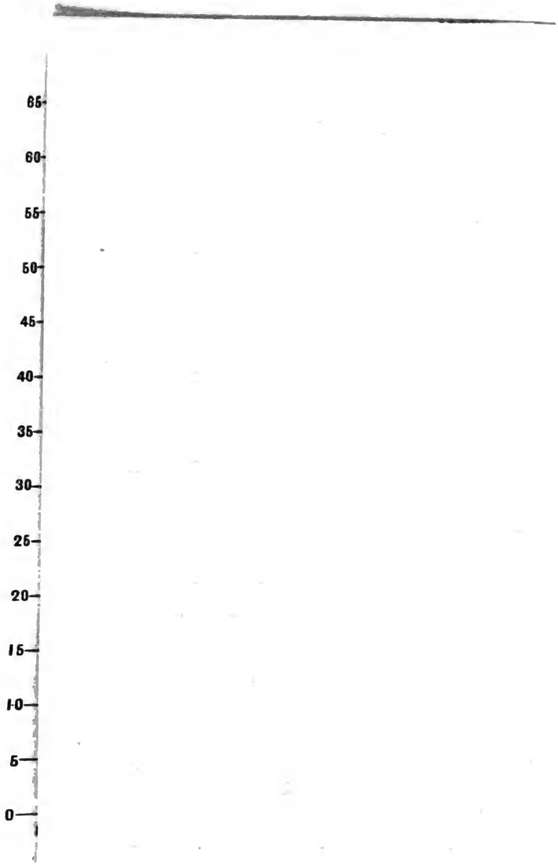
YEARS.	MONTHS.													PUERPERAL MORTALITY.		Annual death rates from all causes per 1000 of population.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Percentages of total mortality.	Per 1000 confinements.[a	
1851	....	....	....	....	....	....	....	1	....	....	....	....	1	0.11	....	36.60
1852	....	....	....	....	....	....	....	....	....	....	1	....	1	0.05	....	46.70
1853	....	....	....	....	....	....	....	....	....	1	....	....	1	0.08	....	22.40
1854	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	64.00
1855	....	....	1	....	....	....	....	....	....	....	....	....	1	0.05	....	27.20
1856	....	....	....	1	1	1	....	1	1	1	....	....	6	0.29	....	24.88
1857	....	3	2	....	7	....	2	2	9	6	1	1	33	1.37	....	27.55
1858	3	7	7	8	6	2	....	4	2	2	3	3	47	2.11	....	24.72
1859	6	3	1	5	1	1	1	1	2	5	3	4	33	1.64	....	21.30
1860	....	....	5	....	....	2	1	1	1	....	....	....	10	0.44	....	20.70
1861	1	1	....	....	....	....	1	....	....	....	....	....	3	0.13	....	18.90
1862	1	....	....	1	3	1	2	1	....	....	1	....	10	0.35	....	20.51
1863	2	....	....	1	4	1	....	....	....	....	....	2	10	0.26	....	25.80
1864	4	5	1	8	2	1	1	....	....	1	3	....	26	0.58	....	26.26
1865	4	3	....	....	1	1	1	....	....	....	....	....	10	0.27	....	22.50
1866	....	....	2	2	2	3	1	2	2	2	....	2	18	0.30	....	32.26
1867	1	....	....	1	1	7	2	4	4	5	....	4	29	0.62	....	21.10
1868	2	5	4	7	1	2	5	2	1	2	3	5	39	0.65	....	23.70
1869	5	6	5	3	4	5	3	7	4	5	7	6	60	0.92	....	23.10
1870	4	8	8	5	2	4	9	5	2	1	3	4	55	0.75	....	23.88
1871	11	4	6	5	6	6	6	....	....	5	8	11	68	0.97	....	20.87
1872	16	14	12	11	6	9	10	9	13	10	7	14	131	1.29	....	27.67
1873	22	14	31	12	5	9	6	8	5	4	10	7	133	1.38	....	25.16
1874	7	10	7	11	4	5	7	3	....	1	2	7	64	0.79	....	20.29
1875	8	8	8	7	7	2	4	2	....	5	5	1	57	0.72	....	19.72
1876	....	....	....	....	....	....	....	....	....	....	....	....	49	0.57	....	21.02
1877	4	5	9	6	3	1	6	....	5	....	1	3	43	0.54	....	18.68
1878	2	8	6	....	6	7	4	5	1	3	6	10	58	0.78	....	16.99
1879	7	8	7	6	8	2	4	3	4	2	5	3	59	0.68	....	17.52
1880	7	5	4	8	1	1	6	2	1	4	9	21	69	0.66	....	20.79
1881 b]	19	24	11	11	20	10	7	7	16	7	5	7	144	1.03	7.31	25.60
1882	4	9	16	11	6	9	9	9	3	6	8	17	107	0.81	5.16	23.60
1883	17	25	18	17	13	6	17	5	9	13	6	6	152	1.32	7.08	19.92
1884	13	14	16	12	6	9	5	3	6	7	8	9	108	0.86	4.57	19.80
1885	13	13	15	16	7	4	4	10	6	5	7	7	107	0.86	4.23	18.76
1886	15	23	18	10	12	4	10	7	9	3	7	8	126	0.92	4.41	19.43
1887	10	8	15	23	12	8	9	10	9	13	18	14	149	0.91	5.16	20.27
1888	25	44	21	22	8	15	10	11	6	6	10	7	186	1.18	6.10	19.65
1889	17	10	18	12	9	1	13	9	10	9	14	15	137	0.81	3.65	17.56
1890	17	17	18	12	13	19	10	7	11	15	15	12	166	0.76	3.55	18.09
1891	27	19	26	18	11	8	7	16	10	3	6	25	176	0.63	3.64	22.20
1892	22	25	21	15	22	11	17	12	8	6	7	8	174	0.66	3.13	18.23
1893	13	13	25	16	15	14	24	9	14	15	4	19	181	0.67	3.31	16.92
1894	31	14	20	13	13	13	31	13	15	11	17	23	214	0.89	3.22	15.24

a] Multiple births counted as single confinements. b] Data concerning births are available only since 1881.

MALARIAL FEVER.

Deaths as reported by months—Totals by years—Percentages of the mortality from all causes—Deaths per 10 000 of population—Annual death rates from all causes—For the years 1851 to 1894 inclusive.

YEARS.	MONTHS.													MALARIAL FEVER MORTALITY.		Annual death rates from all causes per 1000 of population.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Percentages of total mortality.	Per 10 000 of population.	
1851	....	....	....	....	....	....	....	6	4	5	2	....	17	1.08	5.00	36.60
1852	....	2	....	1	1	3	....	4	10	11	6	....	38	2.10	9.81	46.70
1853	....	....	1	1	1	2	2	2	18	2	1	4	34	2.56	5.75	22.40
1854	....	1	....	1	2	11	12	17	10	9	5	2	70	1.65	10.63	64.00
1855	3	1	....	2	3	....	1	4	7	5	....	....	30	1.37	3.75	27.20
1856	....	....	1	4	....	2	....	3	3	3	5	1	22	1.05	2.61	24.80
1857	....	....	5	1	....	2	3	13	4	4	10	5	47	1.94	5.36	27.55
1858	....	1	2	1	....	1	1	2	3	....	2	3	16	0.71	1.77	24.72
1859	....	....	....	3	2	....	1	1	2	....	1	....	10	0.49	1.07	21.30
1860	....	3	1	1	1	4	3	4	7	1	....	....	24	1.06	2.20	20.70
1861	....	....	2	2	3	....	2	3	2	....	1	....	15	0.65	1.25	18.90
1862	2	....	....	2	2	3	....	2	....	3	5	....	19	0.67	1.38	20.51
1863	1	3	1	2	2	1	4	2	1	7	2	1	27	0.69	1.80	25.80
1864	8	4	6	....	4	1	2	1	4	....	....	2	32	0.71	1.88	26.26
1865	....	1	1	6	4	....	3	5	11	8	4	....	43	1.17	2.41	22.50
1866	1	5	1	2	2	7	1	10	16	17	8	4	74	1.24	3.69	32.20
1867	4	5	9	....	3	3	1	4	5	3	1	1	39	0.83	1.73	21.10
1868	2	1	2	2	....	1	3	6	1	4	7	....	29	0.48	1.15	23.70
1869	....	1	3	2	1	2	3	1	3	7	4	5	32	0.49	1.14	23.10
1870	2	5	2	4	1	3	5	7	3	5	8	4	49	0.66	1.59	23.88
1871	3	3	5	2	2	....	3	....	....	4	5	8	35	0.50	1.04	20.87
1872	3	4	6	....	3	5	5	1	11	9	6	4	57	0.56	1.55	27.67
1873	5	7	2	2	5	7	10	6	5	8	2	4	63	0.65	1.65	25.16
1874	2	1	2	7	1	4	5	6	1	1	1	....	31	0.38	0.78	20.29
1875	....	3	2	8	4	2	4	3	8	3	3	5	45	0.56	1.10	19.72
1876	....	....	....	....	....	....	....	....	....	....	....	....	62	0.72	1.52	21.02
1877	....	3	1	1	....	1	4	3	2	3	....	2	20	0.24	0.48	18.68
1878	3	4	4	6	3	5	3	8	8	9	3	3	59	0.79	1.35	16.99
1879	3	4	2	7	2	2	3	13	5	6	2	....	49	0.56	0.99	17.52
1880	5	6	8	3	8	2	5	6	9	8	5	6	71	0.67	1.41	20.79
1881	8	8	8	8	11	4	7	13	25	13	10	9	124	0.89	2.29	25.60
1882	13	9	7	6	5	2	4	11	9	10	9	4	89	0.67	1.58	23.60
1883	6	6	7	9	8	13	9	5	12	6	6	8	95	0.82	1.63	19.92
1884	10	4	9	10	8	6	10	8	6	9	12	6	98	0.78	1.55	19.80
1885	3	5	12	5	12	10	19	11	12	8	10	4	111	0.88	1.66	18.76
1886	7	14	8	12	3	5	8	16	12	10	15	8	118	0.86	1.67	19.43
1887	11	5	8	9	6	2	12	6	3	10	11	3	87	0.56	1.14	20.27
1888	4	5	7	12	11	6	9	12	13	6	6	5	96	0.60	1.19	19.65
1889	3	7	7	5	5	3	10	8	7	12	22	16	105	0.61	1.12	17.56
1890	8	11	12	9	15	9	7	16	9	10	7	8	121	0.55	1.00	18.09
1891	7	9	16	18	22	7	10	14	8	12	10	10	143	0.51	1.14	22.20
1892	9	8	9	5	10	16	21	27	13	8	6	7	139	0.53	0.96	18.23
1893	5	4	4	13	8	5	5	5	8	11	8	7	83	0.30	0.51	16.92
1894	5	1	2	4	3	2	1	1	5	4	4	2	34	0.10	0.21	15.24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Deaths as

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Meteorological Data

CHICAGO

1871-1894

TABULATION OF MONTHLY TEMPERATURES, CHICAGO: 1871-1894.

MONTHS.	Temperature in degrees, Fahr.	YEARS: 1871-1894 INCLUSIVE.																								Average monthly temperatures for 24 years.
		1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	
January	Max	62	45	51	60	44	65	56	49	49	61	41	58	40	49	50	48	52	44	55	62	54	55	46	60	24
	Mean ...	30	25	20	28	16	33	22	32	21	40	19	29	16	19	19	22	16	15	29	31	30	20	12	28	
	Min	10	-12	-16	—6	-20	4	—4	—1	-18	19	-13	1	-17	-18	-13	-14	-15	-17	Zero	—5	10	—5	-16	—9	
February	Max	56	52	53	56	45	63	58	55	51	63	51	62	57	53	47	56	58	47	48	59	58	49	46	48	28
	Mean ...	32	25	24	30	15	32	37	36	27	35	25	39	23	28	18	29	26	23	20	32	29	30	22	23	
	Min	6	—2	-12	9	-13	—3	21	17	—6	12	8	10	—9	—3	-14	—6	—7	-18	-11	3	—8	2	—9	—4	
March	Max	67	45	60	64	73	69	65	68	71	60	48	63	62	59	58	70	68	64	68	56	57	53	69	74	34
	Mean ...	40	28	33	36	31	34	29	45	41	38	32	40	32	34	31	37	32	30	38	30	31	31	33	41	
	Min	32	8	-12	17	9	10	5	25	16	19	11	22	10	—1	4	15	9	—1	20	Zero	7	5	9	9	
April	Max	80	81	83	67	72	70	78	75	80	80	77	76	78	77	76	81	82	83	73	75	75	78	84	84	46
	Mean ...	50	46	43	39	43	47	47	52	47	49	42	46	47	44	46	50	49	46	47	46	47	44	44	47	
	Min	36	27	25	22	17	32	27	36	17	27	17	25	28	31	27	23	19	30	29	28	23	23	27	31	
May	Max	84	83	87	89	79	87	86	78	87	85	87	76	80	78	80	82	86	81	88	86	81	76	83	88	56
	Mean ...	56	54	52	58	54	59	57	55	58	65	61	51	53	56	53	57	60	53	57	53	53	52	52	56	
	Min	38	38	35	38	27	35	33	38	39	37	37	34	36	40	34	40	42	32	36	34	35	37	37	35	
June	Max	87	98	92	95	89	88	87	85	87	91	89	88	84	86	88	87	96	90	86	92	88	91	85	93	66
	Mean ...	66	66	68	70	63	68	67	65	64	71	63	64	64	64	65	66	67	67	62	70	66	64	68	71	
	Min	56	51	44	46	40	47	45	50	43	52	46	42	48	47	42	49	48	43	42	52	44	43	48	40	
July.	Max	92	97	93	99	88	93	91	97	93	95	93	90	91	89	94	94	100	94	90	93	87	94	94	96	72
	Mean .	71	72	69	75	69	74	74	75	76	73	73	69	71	69	73	72	75	73	70	72	67	72	74	73	
	Min	59	52	50	60	56	57	57	59	60	57	57	55	51	54	53	55	61	56	54	56	55	53	60	54	
August	Max	90	93	92	98	86	92	89	91	91	93	98	87	89	91	85	92	98	91	88	96	96	93	95	95	71
	Mean ...	71	71	71	73	68	74	72	74	72	73	75	71	68	68	68	73	69	69	71	68	69	71	70	71	
	Min	54	56	53	58	52	54	55	57	52	53	58	51	54	51	55	53	49	51	54	51	49	50	54	48	
September	Max	87	93	88	89	87	78	86	87	83	85	94	87	84	89	81	86	92	88	84	88	91	88	95	90	64
	Mean ...	60	64	63	67	61	62	67	66	61	63	70	65	61	69	64	66	62	60	63	60	69	64	64	66	
	Min	40	37	41	44	40	37	44	43	39	40	49	42	42	51	47	42	38	36	35	39	48	46	39	44	
October	Max	75	81	75	78	73	73	80	79	84	78	77	77	78	83	69	79	82	76	79	73	86	80	81	76	52
	Mean ...	48	50	50	54	48	49	56	53	61	51	56	58	52	56	52	57	47	49	49	51	53	54	53	52	
	Min	26	28	23	30	30	28	35	27	28	28	41	40	38	28	36	32	14	32	35	28	33	32	26	32	
November	Max	61	59	59	72	57	64	58	57	69	65	64	72	62	64	66	69	67	75	57	67	60	58	67	60	38
	Mean ...	33	32	34	40	37	40	40	44	42	32	40	43	42	41	43	38	36	42	39	42	34	35	36	34	
	Min	9	—2	8	Zero	Zero	14	14	31	16	1	14	21	10	5	28	16	—1	20	12	27	3	12	4	10	
December	Max	45	46	60	52	68	45	67	46	62	50	59	45	57	61	50	60	53	53	64	53	57	57	58	55	30
	Mean ...	21	18	32	33	36	19	43	24	31	24	38	27	31	30	32	25	27	32	41	31	35	23	25	32	
	Min	—8	-23	13	1	—1	-14	22	—9	—2	-15	13	—7	Zero	-11	—2	-10	—5	15	15	8	9	-10	—6	—3	
Average temperature of each year	....	48	46	47	50	45	49	51	52	50	51	49	50	47	48	47	49	47	47	49	45	49	47	46	49	

Mean annual temperature, 24 years, 48.25° F. Maximum, 100° F.—July, 1887. Minimum, 21° F.—December, 1872. Extreme range, 123° F.

TABULATION OF MONTHLY PRECIPITATION, CHICAGO: 1871-1894.

MONTH.	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	Means.
January	4.13	0.68	2.56	3.47	0.96	3.22	1.91	1.31	0.54	3.53	0.87	1.55	1.74	1.39	3.18	3.56	3.13	1.56	1.64	2.98	1.99	1.99	2.08	1.55	2.15
February ...	1.45	0.84	0.47	1.51	1.99	3.90	0.06	2.12	1.47	2.91	5.98	2.24	4.74	3.27	2.01	1.51	5.10	1.51	1.31	2.42	1.95	1.57	2.44	2.13	2.29
March	2.66	3.79	0.89	2.15	1.43	4.04	5.37	4.39	2.37	2.25	2.99	3.43	0.42	5.16	0.57	1.79	0.89	2.99	1.43	2.10	2.13	2.21	1.09	2.66	2.49
April........	3.70	3.03	6.22	2.67	2.32	2.07	2.42	5.57	1.93	5.20	1.84	6.72	3.72	3.05	4.00	1.29	0.46	2.13	2.35	3.28	3.14	2.17	4.16	2.65	3.17
May	3.90	3.24	7.20	2.09	3.64	1.85	1.81	5.22	3.89	4.97	1.85	5.52	7.32	1.53	3.17	1.00	1.38	6.22	5.38	5.13	2.09	6.77	1.93	3.35	3.71
June........	5.56	3.45	1.44	3.25	5.17	5.96	6.04	3.02	3.18	3.50	5.93	5.71	5.61	2.11	5.20	0.94	1.63	1.66	2.93	3.25	2.42	10.58	3.59	1.96	3.50
July	2.52	3.09	4.04	0.58	7.18	3.11	2.98	6.09	5.58	3.07	4.31	3.43	5.53	3.71	2.44	1.53	1.05	3.93	9.56	2.57	2.47	2.23	3.08	0.60	3.53
August......	2.01	2.59	1.58	3.15	3.29	3.66	3.06	3.66	0.45	4.47	0.54	4.96	1.21	2.50	11.28	3.38	3.35	2.10	0.39	2.58	4.52	1.85	0.18	0.60	2.18
September..	0.74	6.43	3.53	3.76	4.39	3.74	2.02	1.99	1.18	2.25	4.34	0.91	1.36	2.29	2.97	6.93	4.03	0.98	2.75	1.39	0.32	1.34	1.98	8.28	2.91
October.....	1.88	0.65	2.43	2.55	4.32	1.20	6.51	5.17	2.72	3.19	6.89	3.40	7.36	3.59	3.87	1.42	2.03	2.95	1.82	4.20	0.36	1.54	1.75	0.84	3.03
November ..	3.62	1.06	1.61	2.83	0.75	3.25	6.08	0.83	4.93	0.87	5.97	1.48	5.26	1.80	2.33	1.66	2.41	2.89	3.49	1.59	2.83	2.68	2.45	1.18	2.66
December ..	3.44	0.22	4.44	0.63	2.62	0.48	2.75	2.58	2.47	1.11	2.67	1.99	1.59	4.21	3.35	1.76	3.67	1.94	1.90	1.25	1.32	1.63	2.14	1.66	2.16
Totals....	35.61	29.07	36.41	28.63	38.06	36.48	41.01	41.95	30.71	37.32	44.18	41.34	45.86	34.61	44.37	26.77	29.13	30.86	34.95	32.74	26.54	36.56	27.47	27.16	33.78

NOTE.—The mean annual precipitation of this period—twenty-four years, from 1871 to 1894, inclusive—is 33.78 inches. During the first eight years, 1871 to 1878, the annual mean was 35.90 inches, with a rising lake level toward the close of the period; in the succeeding eight years, 1879 to 1886, the mean was 38.14 inches, with a constant high lake level; during the last eight-year period, 1887 to 1894, the mean has been only 30.67 inches, with the lowest lake level on record. The driest year during the period was 1891, with 26.54 inches; the wettest, 1883, with 45.86 inches.